PROJECTOR

Service Manual

BARCO RLM W12

Rev.01

DLP DIGITAL PROJECTOR rev.00

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CONTENTS

1,COMPLIANCE OF SAFE REPAIR 5
1-1. Cautions during disassembling and assembling 6
1-2. Lamp 6
1-3. Lens 6
2. SPECIFICATIONS 7
2-1. Optical Specifications 7
2-2 Electrical Specifications. 8
2-3 Mechanical Specifications 10
2-4 Block Diagram.....11
2-5 Fan Location. 13
3,TROUBLESHOOTING 15
3-1 RS-232 Protocol Command.....15
3-2 Troubleshooting & Error Code.....30
4,KEY PART REPLACEMENT & WIRE DRESSING.....36
4-1 Top Cover 36
4-2 W2 Board.....37
4-3 Main Formatter Board.....38
4-4 Fan E Board & Slave Board & RJ-45 Board.....39
4-5 Video Board & DUAL Link DVI (3D) Board.....41
4-6 Fan C Board & Bracket Plate.....42
4-7 Fan B Board & Filter & Lamp 1 & Lamp 2 & Fan 2 & Fan 3.....44
4-8 Back cover & Keypad & Rear IR Board.....47
4-9 Fan 20 & Fan 21 & Fan 22 & Fan23.....48
4-10 Left Cover & Fan 1.....50
4-11 Ballast & DC-DC Board & AC Filter Board & Power Board & Fan 8 & Fan 9....51
4-12 Front Cover & Front IR Board.....56
4-13 Right Cover & Fan 0.....57
4-14 Motor Driver Board & Lens Mount.....59
4-15 Prism Flow Channel & Light Shutter & FIP.....60
4-16 Illumination & Fan 6 & Fan 7 & Fan 10 & Fan 11.....62
4-17 All Module Layout.....65
5. PROGRAM SETTING AND SOFTWARE DOWNLOAD.....66
5-1 Firmware Downloads Procedure for Main Formatter Board.....66

5-2 Firmware Downloads procedure for sxW2 Boa**rd**……..……...**78**
5-3 Firmware downloads procedure for RJ-45 Board……...**84**
5-4 Firmware Download Procedure for Ballast……..……**86**

6. ADJUSTING……..……..……**89**
6-1 FIP Convergence (CG) Adjusting…..……..**89**
6-2 Folding Mirror Adjust……..……..**94**
7. MAINTENANCE……..……...**95**
7-1 Cleaning the projector…….…….…**95**
7-1-1 Cleaning the cabinet.…….……..……...…..**95**
7-1-2 Cleaning the Lens……..…….…….……...…**95**
7-1-3 Cleaning the filters.……..…….…….**95**
7-1-4 Cleaning the optical parts…….…….……..……**96**
7-2 Replacing Consumable Parts…….…….…..…..**97**
7-3 Replacing the Lamp…….…….…….…..**98**
7-4 Replacing the Filter…….…….…….…**100**
8. SPART PARTS LIST & SPARE PARTS PHOTO……..……..**102**
9. PRODUCT PACKAGING……..……..**117**
9-1 Full Set Unit Packaging……..…….…**117**
9-2 Model Accessory Part..…….…….…**118**
9-3 Carton……..…….…….…**119**
9-4 Serial NO. Label Explanation……...…….…….…**120**
9-5 AIR Shipping Packaging…….…….……..…**121**
9-6 SEA shipping Packaging…….…….……..…**122**

APPENDIX TIMING TABLE……..……..…**123**

BARCO RLM W12 Projector

PLEASE NOTE

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This equipment includes parts and assemblies sensitive to damage from electrostatic discharge. Use caution to prevent damage during all service procedures.

1. COMPLIANCE OF SAFE REPAIR

Be sure to read this Service Manual before providing services.

In the projector, full consideration is taken to ensure the safety for fire, electric shock, injury, harmful radiation, and substance. Therefore, observe the notice described in this Service Manual so that safety is kept when providing services. Moreover, be sure to observe the notice described in the Instruction Manual.

Pay attention to the following during service inspection.

1-1 Cautions during disassembling and assembling

1. This equipment contains parts under high voltage. When making repairs, etc. Be sure to pull out the power plug beforehand to insure safety.
2. Parts may be very hot immediately after use. Make sure the equipment has cooled off sufficiently before carrying out repairs.
3. Make sure that parts and screws and wiring, etc. are returned to their original positions. Tube, tape and other insulation materials have been used for safety reasons. The internal wiring has been designed to avoid direct contact with hot parts or parts under high voltage when using clamps or other tools.
4. The parts used in this device have special safety features such as flame-resistance and anti-voltage properties. When replacing parts, always use parts supplied from the factory.
5. After finishing operations make sure that all parts and wires have been returned to their original position and that there has been no deterioration of the area around the location that was worked on.
6. Be sure to use an earth band (wrist band) during repair and inspection.

1-2 Lamp

During current conduction, the lamp is in the high-temperature state. In this case, pay careful attention because a high voltage is used. When replacing a lamp, replace it after confirming that the lamp has cooled sufficiently.

1-3 Lens

Do not look into the lens during projection. This damages your eyes.

2. SPECIFICATIONS

This section provides technical information about the projector's performance.

2-1 Optical Specifications

*Item	Description
Projection system	It is designed with DMD LVDS 0.96" 1920*1200 DC3 DLP™ 3-chips channel high-definition images projector.
Resolution	WUXGA 1200P (1920 x 1200) pixels
Lamp	Dual Lamp System - LAMP UHP 400W Philips E21.9
Brightness	Normal Mode: 9180 ANSI Lumen (Dual Lamp) min ; Normal Mode: 3833 ANSI Lumen (Single Lamp) Echo Mode: 6977 ANSI Lumen (Dual Lamp) min; Echo Mode: 3488 ANSI Lumen (Single Lamp)
Brightness Uniformity	Normal Mode: >80%; Normal Mode: ~ (Single Lamp) Echo Mode: >80% (Dual Lamp); Echo Mode: >70% (Single Lamp)
Contrast Ratio	> 1500:1 min
Focus	Balance focus over the entire image area with Barco 2~ 2.8 Lens (wide) at 100 inch screen, and check the white “ME” text of center and four corners must be visible.
Flare	Center <= 1.5 pixel (not include pixel itself) Corner<=2 pixel (not include pixel itself) with Barco 2~ 2.8 Lens (wide) at 100 inch screen by 0.5 m
Dust & Blemish	No visible dust and blemish @ 100% Black & Full white image by 2.5 m
Color Band	No visible color band around 4 edges and corners @ 100% Black & Full white image
Flicker	No visible flicker around 4 edges and corners @ 100% Black & Full white image
Lens shift	Vertical Lens Shift: Lens shift (Up) >110% ; Lens shift (Down) > 70% Horizontal Lens Shift: Lens shift (Right) >30% ; Lens shift (Left) >30%

Projection Lens	R9862000-TLD+ (0.73:1) R9840775-TLD+ (1.2:1) R9862010-TLD+ (1.5 - 2.0:1) R9862020-TLD+ (2.0 – 2.8:1) R9862030-TLD+ (2.8 – 4.5:1) R9862040-TLD+ (4.5 – 7.5 :1) R9829997-TLD+ (7.5 – 11.2:1) R9862005-TLD+ Ultra (1.25 – 1.6)

2-2 Electrical Specifications

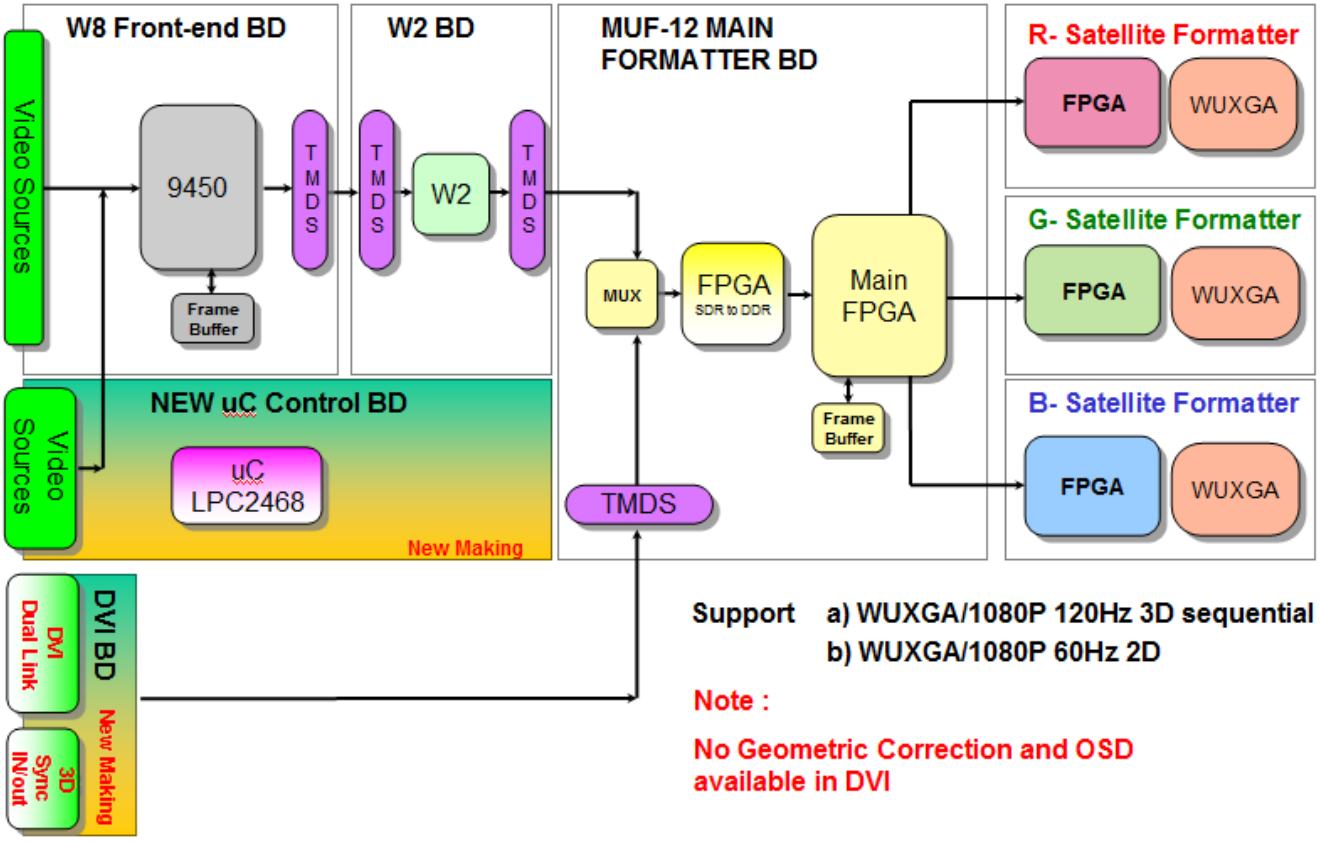
Item	Description
Inputs / Outputs	●HDMI input ●SDI Input ●SDI Output ●D-SUB 15 input (RGBHV) ●Video Input (Composite Video) ●S-Video Input ●5-BNC Input (RGBHV) ●3-RCA Input (YPbPr) ●RS-232 input (Support RS-232 standard, Firmware download, Switch on & off, RS-232 commands) ●IR input x 2 (Front-IR & Back-IR) ●Triggers Input ●RJ-45 (LAN) input (Provide Ethernet Connectivity & Web Server) ●DVI-3D Input (DVI-D Dual Link)
Thermal Sensor	Inlet NTC x 1 FIP NTC x 1
Audible Noise	ECO mode < 37 dB ; Normal mode < 42 dB
Power Requirement	90 ~264 V AC; 50/60 Hz
Input Current	15 A Max
Temperature	Non- Operating : -20~ 60 °C Operating : 0~ 40 °C
Altitude	Non-Operating : no definition Operating : up to 3,000 m @ 25°C
Humidity	Non-Operating : 90% Operating : 90%

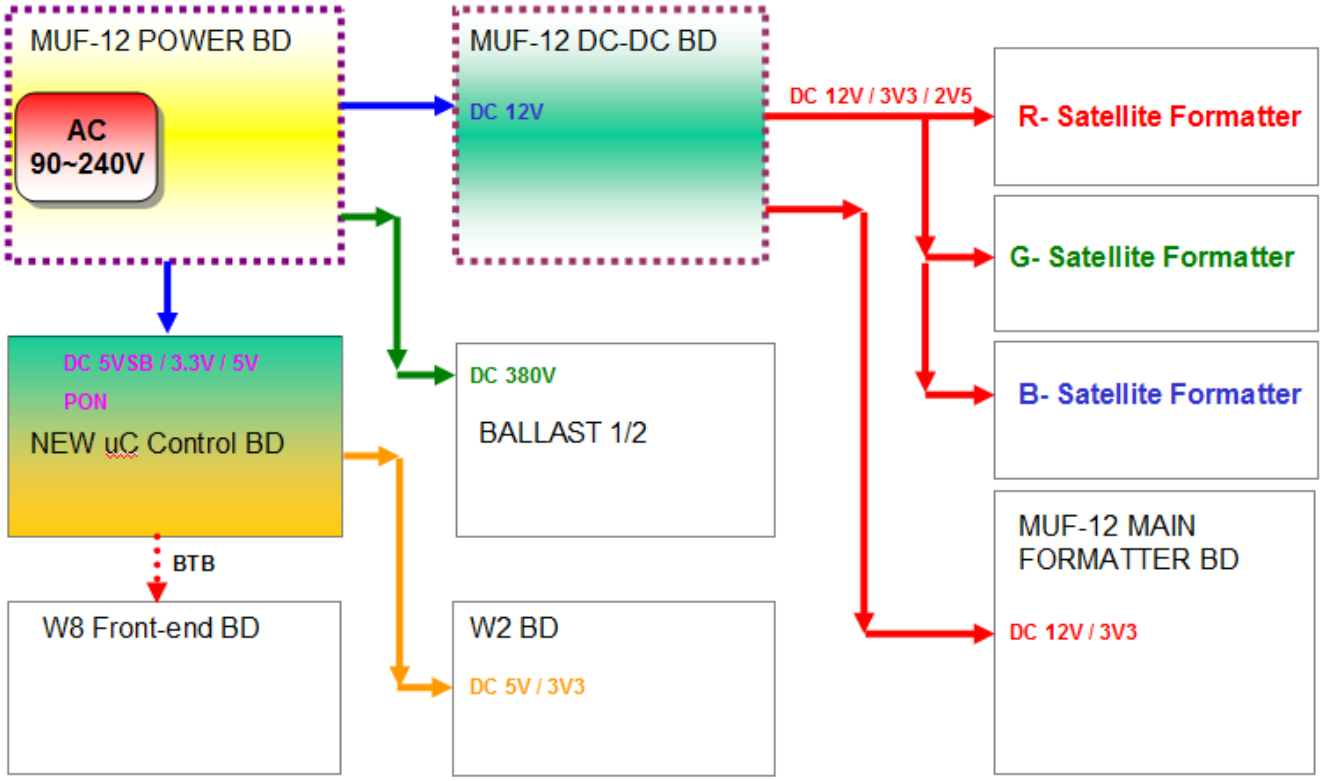
2-3 Mechanical Specifications

Item	Description
Dimensions	19.7" (W) x 10.6" (H) x 24.8" (D) 500 mm (W) x 270 mm (H) x 631 mm (D)
Weight	72 lbs/32 kg

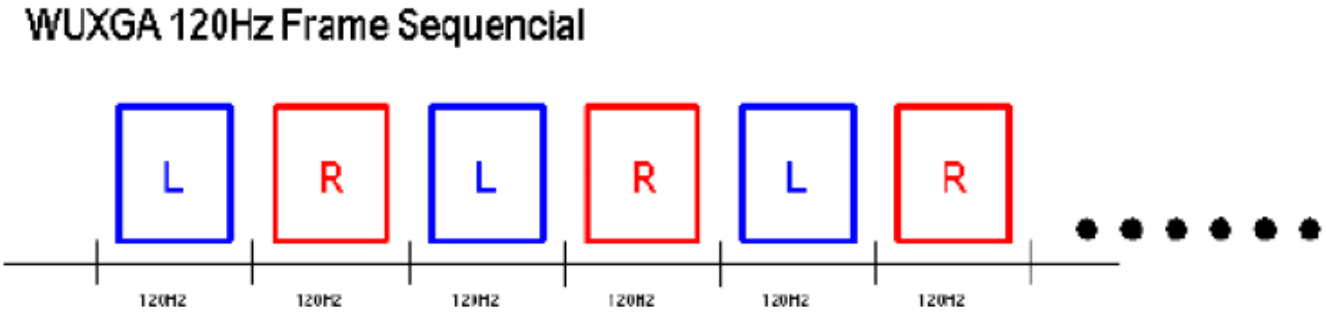
2-4 Block Diagram

W12 WUXGA 3D ALL Boards' Function Block Diagram



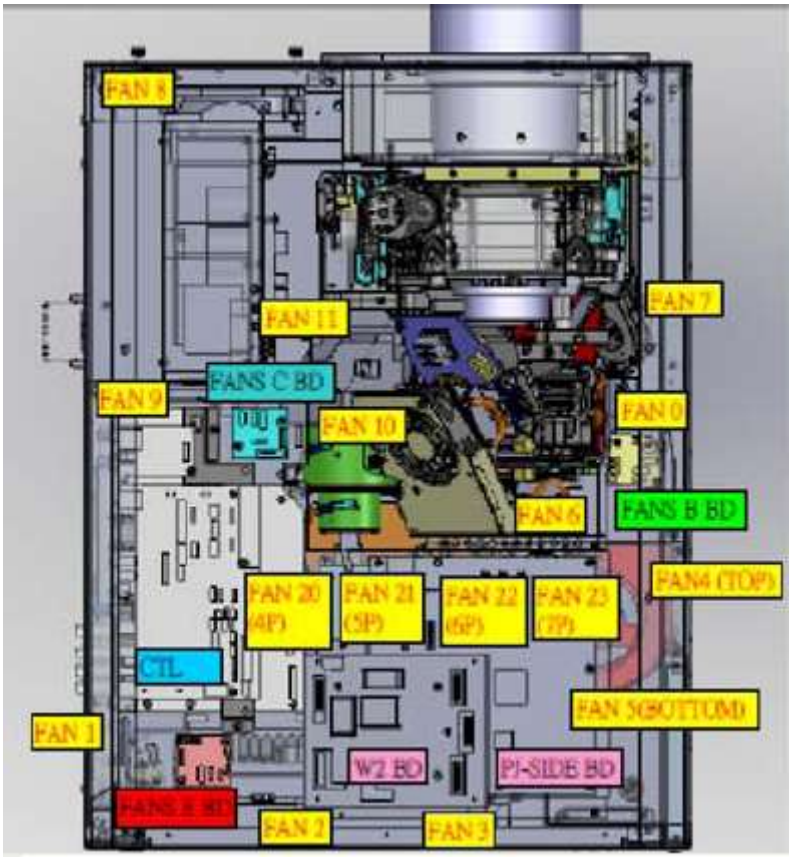


3D Format for RLM W12 DVI Dual Link



2-5 Fan Location

Fan. No	Connector		TYPE	Function	Normal	Eco
FAN0	FANS E BD(CN635)	3PIN	AFB0612HC-F00	RDMD cooling	3500 RPM	2900 RPM
FAN1	FANS E BD(CN635)	4PIN	AFB1212H-SM09	Exhaust	1500 RPM	1200 RPM
FAN2	FANS E BD(CN635)	5PIN	AFB1212H-SM09	Exhaust	1600 RPM	1300 RPM
FAN3	FANS E BD(CN635)	6PIN	AFB1212H-SM09	Exhaust	1600 RPM	1300 RPM
FAN4	FANS B BD(CN636)	3PIN	BFB1212L-SZ57	Prism cooling	1200 RPM	900 RPM
FAN5	FANS B BD(CN636)	4PIN	BFB1212L-SZ57	Engine flow inlet	1200 RPM	900 RPM
FAN6	FANS B BD(CN636)	5PIN	AFB0812HD-AF00	GDMD cooling	2100 RPM	1800 RPM
FAN7	FANS B BD(CN636)	6PIN	BFB0612HB-SE13	RDMD front cooling	2500 RPM	2500 RPM
FAN8	FANS C BD(CN637)	3PIN	AFB1212H-SM09	Power/ballast cooling	1500 RPM	1200 RPM
FAN9	FANS C BD(CN637)	4PIN	AFB1212H-SM09	Power/ballast cooling	1500 RPM	1200 RPM
FAN10	FANS C BD(CN637)	5PIN	AFB0812HD-AF00	BDMD cooling	2300 RPM	2000 RPM
FAN11	FANS C BD(CN637)	6PIN	BFB0612HB-SE13	BDMD front cooling	2500 RPM	2500 RPM
FAN20	CN646(PWM)OnBoard	4PIN	BFB0712HD-SP01	Lamp burner	4000 RPM	3300 RPM
FAN21	CN647(PWM)OnBoard	5PIN	BFB0712HD-SP01	Lamp burner	2000 RPM	2000 RPM
FAN22	CN648(PWM)OnBoard	6PIN	BFB0712HD-SP01	Lamp burner	4000 RPM	3300 RPM
FAN23	CN649(PWM)OnBoard	7PIN	BFB0712HD-SP01	Lamp burner	2000 RPM	2000 RPM
FAN-R1			BFB0712LD-SE00	FPGA cooling	12V	12V


FAN 8
FAN 11
FANS C BD
FAN 9
FAN 10
FAN 7
FAN 0
FAN 6
FANS B BD
FAN4 (TOP)
FAN 20 (4P)
FAN 21 (5P)
FAN 22 (6P)
FAN 23 (7P)
CTL
FAN 5(BOTTOM)
FAN 1
W2 BD
PJ-SIDE BD
FANS A BD
FAN 2
FAN 3

3. TROUBLESHOOTING

3-1. RS-232 Protocol Command

The RS-232 Commands use only ASCII characters which can be entered using a typical terminal emulator like Windows HyperTerminal with the following setting:

Bits per second: 115200
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None

Note that each input character will be echoed on the terminal by MCU and there is no need to set the local echo "ON" with the terminal setting.

System Operation commands.

The Operation commands tell the projector what to do. All commands start with 2 letters: "op" for operations commands, and a space [SP] then following a control command then finally the value wants to read, set, increase or decrease. All commands must end with a carriage return (ASCII hex 0D), shown as [CR] below. The syntax for operations commands is as follows:

op[SP]<operation command>[SP]<Setting Value>[CR]

For all but Execute functions the response from the projector will be the command and "=<value>" where <value> is the current value or "NA" if the value is not available. For Execute functions the response will be the same command. All responses will be in CAPS. Please refer to the following table for command list and examples:

System Operation command:

Operation	Commands	Values
Set	= <value>	Makes the unit take that value.
Get	?	Asks what the current value is.
Increment	+	Adds 1 to the current value.
Decrement	-	Subtracts 1 from the current value.
Execute	(none)	Performs an action such as a reset.

Motor operation command:

For motor control like lens shift, focus and zoom, the parameters " **+** " and " **-** " are defined as follows.

Command item	command	System Action
focus	+ -	+ => Focus Near, - => Focus Far
Zoomio	+ -	+ => Zoom out - => Zoom in
Vert.offset	+ -	+ => Up - => Down
horiz.offset	+ -	+ => Right - => Left
Lens.center	(execute)	Midposition shift

Get operations command example:

Input: op bright ? [CR]

System Response: OP BRIGHT = 100

Increase & Decrease operations command examples:

Input: op bright + [CR]

System Response: OP BRIGHT = 101

Input: op bright - [CR]

Response: OP BRIGHT = 126

Set operations command example:

Input: op bright = 127 [CR]

System Response: OP BRIGHT = 127

Execute command example:

Input: op auto.img [CR]

Response: OP AUTO.IMG

The list of valid operations commands for Barco W12 are shown in below Table.

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
1-1	**input.sel**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	**Note1; Note3**
1-2	**input.lock**	**= ?**	**0 = Auto** **1 = 48 Hz** **2 = 50 Hz** **3 = 60 Hz**	**Note2**
1-3	**auto.powoff**	**= ?**	**0 = Off** **1 = On**	**Note1**
1-4	**auto.powon**	**= ?**	**0 = Off** **1 = On**	
1-5	**no.signal**	**= ?**	**0 = Logo** **1 = Blue** **2 = Black** **3 = White**	**Note1**
1-6	**vid.std**	**= ?**	**0 = Auto** **1 = PAL** **2 = SECAM** **3 = NTSC**	**Note2; Note4**
1-7	**auto.imgadj**	**= ?**	**0 = Off** **1 = Auto** **2 = Always**	**Note2**
2-1	**contrast**	**= ? + -**	**0 - 200**	**Note2**
2-2	**bright**	**= ? + -**	**0 - 200**	**Note2**
2-3	**saturat**	**= ? + -**	**0 - 200**	**Note2; Note4**
2-4	**tint**	**= ? + -**	**0 - 200**	**Note2; Note4**
2-5	**sharp**	**= ? + -**	**0 - 200**	**Note2**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
2-6	**nr**	**= ? + -**	**0 - 200**	**Note2**
2-7	**color.temp**	**= ?**	**0 = 3200K** **1 = 5400K** **2 = 6500K** **3 = 9300K** **4 = Native**	**Note2;** **Note8**
2-8	**red.offset**	**= ? + -**	**0-200**	**Note2**
2-9	**green.offset**	**= ? + -**	**0-200**	**Note2**
2-10	**blue.offset**	**= ? + -**	**0-200**	**Note2**
2-11	**red.gain**	**= ? + -**	**0-200**	**Note2**
2-12	**green.gain**	**= ? + -**	**0-200**	**Note2**
2-13	**blue.gain**	**= ? + -**	**0-200**	**Note2**
2-14	**aspect**	**= ?**	**0 = 5:4** **1 = 4:3** **2 = 16:10** **3 = 16:9** **4 = 1.88** **5 = 2.35** **6 = Letterbox** **7 = Native** **8 =Unscaled**	**Note2;** **Note5**
2-15	**h.total**	**= ? + -**	**0-200**	**Note2 ; Note7**
2-16	**h.pos**	**= ? + -**	**0-200**	**Note2**
2-17	**h.phase**	**= ? + -**	**0-200**	**Note2; Note7**
2-18	**v.pos**	**= ? + -**	**0-200**	**Note2**
2-19	**auto.img**	**(execute)**		**Note2**
2-20	**Color.space2**	**= ?**	**0 = Auto** **1 = YUV HD** **2 = YUV STD** **3 = RGB-PC(0-255)** **4 = RGB-Video(16-255)**	**Note2**
3-1	**zoom**	**= ?**	**0 = Off** **1 = Crop** **2 = Zoom**	**Note2; Note6**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
3-2	**pip.sel**	**= ?**	**1 = HDMI 1** **2 = HDMI 2** **3 = RGB D-15** **4 = YUV 1** **5 = RGBHV/YUV2** **6 = Composite Video** **7 = S-Video** **8 = RGB-S** **9 = SDI/HDSDI/3G**	**Note1;** **Note9;** **Please refer to appendix 1 for the valid main/pip source selection**
3-3	**pip.pos**	**= ?**	**0 = Top left** **1 = Top right** **2 = Bottom left** **3 = Bottom right** **4 = Split L-R**	**Note1;** **Note10**
3-4	**pip**	**= ?**	**0 = Off** **1 = On**	**Note1**
4-1	**lamp.mode**	**= ?**	**0 = Economy** **1 = Standard** **2 = Dimming**	**Note2**
4-2	**lamps**	**= ?**	**0 = Single** **1 = Dual**	**Note1;** **Note11**
4-3	**altitude**	**= ?**	**0 = Off** **1 = On**	**Note1**
4-4	**lamp.pwr**	**= ?**	**0-26 (79.6 % ~100.0 %)**	**Note2**
4-5	**lamp1.stat**	**?**	**0 = Off** **1 = On**	**Note1**
4-6	**lamp2.stat**	**?**	**0 = Off** **1 = On**	**Note1**
5-1	**rear.proj**	**= ?**	**0 = front** **1 = rear**	**Note1**
5-2	**ceil.mode**	**= ?**	**0 = floor** **1 = ceiling**	**Note1**
5-3	**zoomio**	**+ -**	**+ = Zoom out** **- = Zoom in**	**Motor command;** **Note1**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
5-4	**focus**	**+ -**	**+ = Focus Near** **- = Focus Far**	**Motor command;** **Note1**
5-5	**vert.offset**	**+ -**	**+ = Up** **- = Down**	**Motor command;** **Note1**
5-6	**horiz.offset**	**+ -**	**+ = Right** **- = Left**	**Motor command;** **Note1**
5-7	**dyna.cont**	**= ?**	**0 = Off** **1 = On**	**Note2**
5-8	**gamma**	**= ?**	**0 = 1.8** **1 = 2.0** **2 = 2.2** **3 = 2.35** **4 = 2.5**	**Note2**
5-9	**int.ptrn**	**= ?**	**0 = Off** **1 = Color Bars** **2 = Hatch** **3 = Burst** **4 = Red** **5 = Green** **6 = Blue** **7 = White** **8 = Black** **9 = TI-Red** **10 = TI-Green** **11 = TI-Blue** **12 = TI-Ramp**	**Note1**
5-10	**color.space**	**= ?**	**0 = Native** **1 = EBU** **2 = SMPTE** **3 = Custom**	**Note2**
5-10a	**Lens.center**	**(execute)**		**Note1**
5-11	**h.keystone**	**= ? + -**	**-350~+350**	**Note1; Note15**
5-12	**v.keystone**	**= ? + -**	**-200~+200**	**Note1; Note15**
5-13	**warp.rotat**	**= ? + -**	**-20 ~ +20 (in ¼∘unit)**	**Note1**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
5-14	**warp.pinbrl**	**= ? + -**	**-100 ~ +100**	**Note1**
5-16	**warp.tlc.x** **warp.tlc.y**	**= ? + -**	**'x: -192 ~ +192** **'y: -120 ~ +120**	**Note1**
5-17	**warp.trc.x** **warp.trc.y**	**= ? + -**	**'x: -192 ~ +192** **'y: -120 ~ +120**	**Note1**
5-18	**warp.blc.x** **warp.blc.y**	**= ? + -**	**'x: -192 ~ +192** **'y: -120 ~ +120**	**Note1**
5-19	**warp.brc.x** **warp.brc.y**	**= ? + -**	**'x: -192 ~ +192** **'y: -120 ~ +120**	**Note1**
5-19a	**warp.reset**	**(execute)**		**Note1**
5-19b	**w2.recover**	**(execute)**		**Note1**
5-20	**blank.top**	**= ? + -**	**0 ~ 360**	**Note1**
5-21	**blank.btm**	**= ? + -**	**0 ~ 360**	**Note1**
5-22	**blank.left**	**= ? + -**	**0 ~ 534**	**Note1**
5-23	**blank.right**	**= ? + -**	**0 ~ 534**	**Note1**
5-23a	**blank.rst**	**(execute)**		**Note1**
5-24	**scen.stat**	**= ?**	**0 = Off** **1 = On**	**Note1**
5-25	**scen.wht.top** **scen.wht.btm**	**= ? + -**	**0 ~ 500**	**Note1 ; Note 16**
5-26	**scen.wht.left** **scen.wht.right**	**= ? + -**	**0 ~ 800**	**Note1 ; Note 16**
5-27	**scen.blk.top** **scen.blk.btm**	**= ? + -**	**0 ~ 32**	**Note1; Note 17 multiple of 8;the adjustable range and 8-multiple restrictions are per Geo Semi'specification.**
5-28	**scen.blk.left** **scen.blk.right**	**= ? + -**	**0 ~ 32**	**Note1 ; Note 17 multiple of 4;the adjustable range and 4-multiple restrictions are per Geo Semi'specification.**
5-29	**scen.red**	**= ? + -**	**0 ~ 32**	**Note1**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
5-30	**scen.green**	**= ? + -**	**0 ~ 32**	**Note1**
5-31	**scen.blue**	**= ? + -**	**0 ~ 32**	**Note1**
5-32	**scen.all**	**= ? + -**	**0 ~ 32**	**Note1;Note18**
5-33	**scen.reset**	**(execute)**		**Note1**
5-34	**scen.adl**	**= ?**	**0 = Off** **1 = On**	**Note1**
6-1	**ir.addr**	**= ?**	**0 = remote code 1** **1 = remote code 2**	
6-2	**eco.net.pow**	**= ?**	**0 = Off (RJ45 Power On)** **1 = On (RJ45 Power Off)**	
6-3	**proj.ctrl**	**= ?**	**0 = rs232** **1 = network**	**Note12**
6-4	**net.ipaddr**	**= ?**	**<string>**	
6-5	**net.subnet**	**= ?**	**<string>**	
6-6	**net.gateway**	**= ?**	**<string>**	
6-7	**net.dhcp**	**= ?**	**0 = Off** **1 = On**	
6-8	**menu.pos**	**= ?**	**0 = Top left** **1 = Top right** **2 = Bottom left** **3 = Bottom right** **4 = center**	**Note1**
6-9	**startup.logo**	**= ?**	**0 = Off** **1 = On**	
6-10	**startup.chime**	**= ?**	**0 = Off** **1 = On**	

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
6-11	**btn.1**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	
6-12	**btn.2**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	
6-13	**btn.3**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
6-14	**btn.4**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	
6-15	**btn.5**	**= ?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	
6-16	**trig.1**	**= ?**	**0 = 5:4** **1 = 4:3** **2 = 16:10** **3 = 16:9** **4 = 1.88** **5 = 2.35** **6 = Letterbox** **7 = Native** **8 = Unscaled** **9 = Auto**	**Note1**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
6-17	**trig.2**	**= ?**	**0 = 5:4** **1 = 4:3** **2 = 16:10** **3 = 16:9** **4 = 1.88** **5 = 2.35** **6 = Letterbox** **7 = Native** **8 = Unscaled** **9 = Auto**	**Note1**
6-18	**auto.src**	**= ?**	**0 = Off** **1 = On**	**Note1**
6-19	**lang**	**= ?**	**0 = English** **1 = French** **2 = Spanish** **3 = German** **4 = Portuese** **5 = Chinese Simplified** **6 = Chinese Traditional** **7 = Japanese** **8 = Korean**	
7-1	**model**	**?**	**<string>**	
7-2	**ser.no**	**?**	**<string>**	
7-3	**sw.ver**	**?**	**<string>**	**Note13**
7-4	**act.src**	**?**	**0 = HDMI 1** **1 = HDMI 2** **2 = RGB D-15** **3 = YUV 1** **4 = RGBHV/YUV2** **5 = Composite Video** **6 = S-Video** **7 = RGB-S** **8 = SDI/HDSDI/3G** **9 = STEREO DVI**	**Note1**

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
7-5	pip.src	?	0 = Off 1 = HDMI 1 2 = HDMI 2 3 = RGB D-15 4 = YUV 1 5 = RGBHV/YUV2 6 = Composite Video 7 = S-Video 8 = RGB-S 9 = SDI/HDSDI/3G	Note1
7-6	pixel.clock	?	<string>	In MHz ; Note2
7-7	signal	?	<string>	Note2
7-8	h.refresh	?	<string>	Note2
7-9	v.refresh	?	<string>	Note2
7-10	lamp1.hours	?	<string>	
7-11	lamp2.hours	?	<string>	
7-12	lamp1.reset	(execute)		
7-13	lamp2.reset	(execute)		
7-14	proj.runtime	?	<string>	
7-15	blue.only	= ?	0 = Off 1 = On	Note1
7-16	fact.reset	(execute)		
8-1	CS_cust_Rx	= ?	000 ~ 999	P7 Command; Note1
8-2	CS_cust_Ry	= ?	000 ~ 999	P7 Command; Note1
8-3	CS_cust_Gx	= ?	000 ~ 999	P7 Command; Note1
8-4	CS_cust_Gy	= ?	000 ~ 999	P7 Command; Note1
8-5	CS_cust_Bx	= ?	000 ~ 999	P7 Command; Note1
8-6	CS_cust_By	= ?	000 ~ 999	P7 Command; Note1
8-7	CS_cust_Wx	= ?	000 ~ 999	P7 Command; Note1
8-8	CS_cust_Wy	= ?	000 ~ 999	P7 Command; Note1
8-9	CS_cust_Cx	= ?	000 ~ 999	P7 Command; Note1
8-10	CS_cust_Cy	= ?	000 ~ 999	P7 Command; Note1

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
8-11	**CS_cust_Mx**	**= ?**	**000 ~ 999**	**P7 Command; Note1**
8-12	**CS_cust_My**	**= ?**	**000 ~ 999**	**P7 Command; Note1**
8-13	**CS_cust_Yx**	**= ?**	**000 ~ 999**	**P7 Command; Note1**
8-14	**CS_cust_Yy**	**= ?**	**000 ~ 999**	**P7 Command; Note1**
0.1	**picture.mute**	**= ?**	**0 = Off** **1 = On**	
0.2	**power.on**	**(execute)**		
0.3	**power.off**	**(execute)**		
0.4	**text.mode**	**= ?**	**0 = Off** **1 = On**	**Note14**
0.5	**status**	**?**	**0 = standby** **1 = warm up** **2 = imaging** **3 = cooling** **4 = warning**	

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
0.6	**errcode**	**?**	**0=ErrMsgOverTempInlet:** **1=ErrMsgOverTempDMD:** **2=ErrMsgOverTempLamp1:** **3=ErrMsgOverTempLamp2:** **4=ErrMsgOverTempBallast1:** **5=ErrMsgOverTempBallast2:** **6=ErrMsgFanInitError:** **7=ErrMsgFan0RotateError:** **8=ErrMsgFan1RotateError:** **9=ErrMsgFan2RotateError:** **10=ErrMsgFan3RotateError:** **11=ErrMsgFan4RotateError:** **12=ErrMsgFan5RotateError:** **13=ErrMsgFan6RotateError:** **14=ErrMsgFan7RotateError:** **15=ErrMsgDMDInitFail:** **16=ErrMsgLampInitFail:** **17=ErrMsgLampLitFail:** **18=ErrMsgBallastUartError:** **19=ErrMsgExGpioFail:** **20=ErrMsgInterLockOpen:** **21=ErrMsgGF9450NoResponse:** **22=ErrMsgSystemI2cFail:** **23=ErrMsgSoftwareI2cFail:** **24=ErrMsgEepromFail:** **25=ErrMsgEdidFail:** **26=ErrMsgEepVersionFail:** **27=ErrMsgRstGennum:** **28=ErrMsgFan8RotateError:** **29=ErrMsgFan9RotateError:** **30=ErrMsgFan10RotateError:** **31=ErrMsgFan11RotateError:** **32= ErrMsgLamp2LitFail:** **33= ErrMsgBallast2UartError:** **34=ErrMsgGtInletTp:** **35=ErrMsgGtDmdTp,** **36=ErrMsgInletTempSensorFail,** **37=ErrMsgDMDTempSensorFail,** **38=ErrMsgGeoSystemFail** **39=ErrMsgNormalFail** **40=ErrMsgFan12RotateError:** **41=ErrMsgFan13RotateError:** **42=ErrMsgFan14RotateError:** **43=ErrMsgFan15RotateError:** **44=ErrMsgFan16RotateError:** **45=ErrMsgFan17RotateError:** **46=ErrMsgFan18RotateError:** **47=ErrMsgFan19RotateError:** **48=ErrMsgFan20RotateError:** **49=ErrMsgFan21RotateError:** **50=ErrMsgFan22RotateError:** **51=ErrMsgFan23RotateError:**	
0.7	**f.search**	**= ?**	**0 = F1 Search** **1 = F2 Search (default)**	
0.8	**sdi.3gccir**	**= ?**	**0 = TRS** **1 = CCIR**	

Barco RLM W12 Operation Commands				
Command Item	**Operation**	**Commands**	**Values**	**Notes**
0.9	**darkTm.sel**	**= ?**	**0 = 650 us** **1 = 1300 us** **2 = 1950 us**	**Note 19**
0.10	**3dsync.inv**	**= ?**	**0 = off** **1 = on**	**Note 19**
0.11	**3dsync.dly**	**= ? + -**	**-32768 ~ 32767**	**Note 19** **In microseconc**

REMARK: An input command will get back with "NA" when the input command is "Not Applicable" in some specific conditions.

Note1: Not applicable in standby mode.

Note2: Not applicable in standby mode or without signal locked.

Note3: Not applicable when picture mute is on.

Note4: Only valid when source is one of Composite, S-Video and RGB-S.

Note5: Native aspect ratio is not applicable when zoom is set to "Zoom"; Letterbox aspect ratio is not applicable when the input format is one of formats as listed in appendix 2.

Note6: Selection "Zoom" is not applicable when aspect ratio is set to Native.

Note7: Only applicable when source is one of RGB D-15, YUV1 and RGBHV/YUV2.

Note8: Not applicable when color space is set to custom.

Note9: pip.sel can NOT be set to 0.

Note10: Not applicable when pip is off.

Note11: Not applicable when lamp is cooling.

Note12: Not applicable when eco.net.pow is on.

Note13: Only MCU version number will be read back in standby mode.

Note14: Not applicable when the internal pattern is displayed.

Note15: The summation of the absolute value of h.keystone and v.keystone should not be greater than 350.

Note16: Per Geo Semi's specification, the minimum blend size is 200, values in the range 1~199 are not allowed

Note17: Per Geo Semi's specification, black level (position) adjustment will only work with an active white level setting on the corresponding side.

Note18: When scen.red, scen.green, scen.blue values are not equal, the command will get back "NA" in reading.

Note19: Only available when "STEREO DVI" source is active

3-2. Troubleshooting & Error Code

Error Code Definition

In RS232 debug mode, the Main formatter board & Slave MCU will response with error code in case of system error like lamp fail, or thermal situation failure, etc. They are defined as below table.

Table1: Error code definition

Error code	Definition	Error code	Definition
0	**ErrMsgOverTempInlet**	**11**	**ErrMsgFan4RotateError**
1	**ErrMsgOverTempDMD**	**12**	**ErrMsgFan5RotateError**
2	**ErrMsgOverTempLamp1**	**13**	**ErrMsgFan6RotateError**
3	**ErrMsgOverTempLamp2**	**14**	**ErrMsgFan7RotateError**
4	**ErrMsgOverTempBallast1**	**15**	**ErrMsgDMDInitFail**
5	**ErrMsgOverTempBallast2**	**16**	**ErrMsgLampInitFail**
6	**ErrMsgFanInitError**	**17**	**ErrMsgLampLitFail**
7	**ErrMsgFan0RotateError**	**18**	**ErrMsgBallastUartError**
8	**ErrMsgFan1RotateError**	**19**	**ErrMsgExGpioFail**
9	**ErrMsgFan2RotateError**	**20**	**ErrMsgInterLockOpen**
10	**ErrMsgFan3RotateError**	**21**	**ErrMsgGF9450NoResponse**

Table2: Error code definition (continued)

Error code	**Definition**	**Error code**	**Definition**
22	**ErrMsgSystemI2cFail**	**33**	**ErrMsgBallast2UartError**
23	**ErrMsgSoftwareI2cFail**	**34**	**ErrMsgGtInletTp**
24	**ErrMsgEepromFail**	**35**	**ErrMsgGtDmdTp**
25	**ErrMsgEdidFail**	**36**	**ErrMsgInletTempSensorFail**
26	**ErrMsgEepVersionFail**	**37**	**ErrMsgDMDTempSensorFail**
27	**ErrMsgRstGennum**	**38**	**ErrMsgGeoSystemFail**
28	**ErrMsgFan8RotateError**	**39**	**ErrMsgNormalFail**
29	**ErrMsgFan9RotateError**	**40**	**ErrMsgFan12RotateError**
30	**ErrMsgFan10RotateError**	**41**	**ErrMsgFan13RotateError**
31	**ErrMsgFan11RotateError**	**42**	**ErrMsgFan14RotateError**
32	**ErrMsgLamp2LitFail**	**43**	**ErrMsgFan15RotateError**

Table3: Error code definition (continued)

Error code	Definition	Error code	Definition
44	**ErrMsgFan16RotateError**		
45	**ErrMsgFan17RotateErro**		
46	**ErrMsgFan18RotateError**		
47	**ErrMsgFan19RotateError**		
48	**ErrMsgFan20RotateError**		
49	**ErrMsgFan21RotateError**		
50	**ErrMsgFan22RotateError**		
51	**ErrMsgFan23RotateError**		

Error Code Message – Troubleshooting and what parts need to replace

0	**ErrMsgOverTempInlet:** –Temp. is over spec. Check if there is anything blocks in inlet or replace Inlet thermal sensor.
1	**ErrMsgOverTempDMD** – Temp. is over spec. Check or replace DMD thermal sensor.
2	**ErrMsgOverTempLamp1**– Check or replace Lamp 1 thermal sensor state.
3	**ErrMsgOverTempLamp2**– Check or replace Lamp 2 thermal sensor state.
4	**ErrMsgOverTempBallast1**–Check and replace Ballast1 thermal state.
5	**ErrMsgOverTempBallast2** –Check and replace Ballast2 thermal state.
6	**ErrMsgFanInitError**–Anyone fan could be error when power on. Thus, check and replace error fan you find out. And, try to replace fan board.
7	**ErrMsgFan0RotateError** – Fan0 gets error during projector working. Check and replace fan 0.
8	**ErrMsgFan1RotateError** – Fan1 gets error during projector working. Check and replace fan 1.
9	**ErrMsgFan2RotateError** – Fan2 gets error during projector working. Check and replace fan 2.
10	**ErrMsgFan3RotateError** – Fan3 gets error during projector working. Check and replace fan 3.
11	**ErrMsgFan4RotateError** – Fan4 gets error during projector working. Check and replace fan 4.
12	**ErrMsgFan5RotateError** – Fan5 gets error during projector working. Check

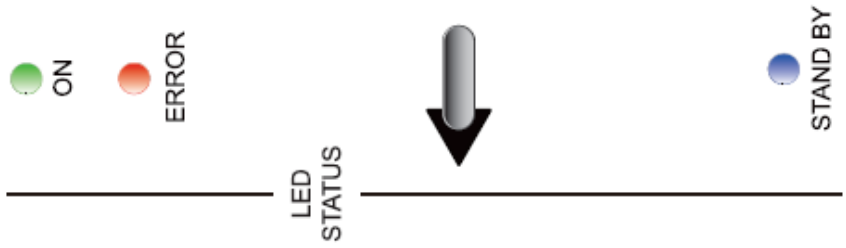
	and replace fan 5.
13	**ErrMsgFan6RotateError** – Fan6 gets error during projector working. Check and replace fan 6.
14	**ErrMsgFan7RotateError** –Fan7 gets error during projector working. Check and replace fan 7.
15	**ErrMsgDMDInitFail** –Check and replace DMD board and DMD chip.
16	**ErrMsgLampInitFail** –Check and replace ballast 1.
17	**ErrMsgLampLitFail** –Check and replace Lamp 1.
18	**ErrMsgBallastUartError** –Check and replace ballast 1 and power board.
19	**ErrMsgExGpioFail** –Check and replace video or main formatter board.
20	**ErrMsgInterLockOpen**–Check and confirm Interlock.
21	**ErrMsgGF9450NoResponse** –Check and replace video board.
22	**ErrMsgSystemI2cFail** –Check and replace all board.
23	**ErrMsgSoftwareI2cFail** –Reserved & None for this model.
24	**ErrMsgEepromFail** –Check and replace main formatter board.
25	**ErrMsgEdidFail**–Check and replace video board.
26	**ErrMsgEepVersionFail**–Reserved & None for this model.
27	**ErrMsgRstGennum** –Reserved & None for this model.
28	**ErrMsgFan8RotateError** –Fan8 gets error during projector working. Check and replace fan 8.
29	**ErrMsgFan9RotateError** –Fan9 gets error during projector working. Check and replace fan 9.
30	**ErrMsgFan10RotateError** –Fan10 gets error during projector working. Check and replace fan 10.
31	**ErrMsgFan11RotateError** –Fan11 gets error during projector working. Check and replace fan 11.
32	**ErrMsgLamp2LitFail** —Check and replace Lamp 2.
33	**ErrMsgBallast2UartError** —Check and replace ballast 2 and power board.
34	**ErrMsgGtInletTp** —Reserved & None for this model.
35	**ErrMsgGtDmdTp** –Reserved & None for this model.
36	**ErrMsgInletTempSensorFail**—Reserved & None for this model.
37	**ErrMsgDMDTempSensorFail** –Reserved & None for this model.
38	**ErrMsgGeoSystemFail** – Check and replace the W2 board.
39	**ErrMsgNormal** —It represent everything is normal.
40	**ErrMsgFan12RotateError** — Reserved & None for this model.
41	**ErrMsgFan13RotateError** — Reserved & None for this model.
42	**ErrMsgFan14RotateError** — Reserved & None for this model.

43	**ErrMsgFan15RotateError** — Reserved & None for this model.
44	**ErrMsgFan16RotateError** — Reserved & None for this model.
45	**ErrMsgFan17RotateError** — Reserved & None for this model.
46	**ErrMsgFan18RotateError** — Reserved & None for this model.
47	**ErrMsgFan19RotateError** — Reserved & None for this model.
48	**ErrMsgFan20RotateError** —Fan20 gets error during projector working. Check and replace fan 20.
49	**ErrMsgFan21RotateError** —Fan21 gets error during projector working. Check and replace fan 21.
50	**ErrMsgFan22RotateError** –Fan22 gets error during projector working. Check and replace fan 22.
51	**ErrMsgFan23RotateError** –Fan23 gets error during projector working. Check and replace fan 23.

Simple troubleshooting and definition of the LED indicators

1. During projection, the lamp suddenly goes off and the picture disappears. 2.The lamp does not turn on even when the projector has been turned on.	The lamp might have been damaged; check the LED indicator on the rear panel of the projector and see if it is blinking in red.	The lamp has reached the end of its service life; please replace it.

LED STATUS



STAND BY

Turns blue	Indicates that the projector is in standby mode; this also means the p rojector has not been turned on by pressing the SOFT POWER button but has been connected to power.
The indicator is off	This indicates that the projector has either been turned on and is working normally or the projector is not connected to power.

ON

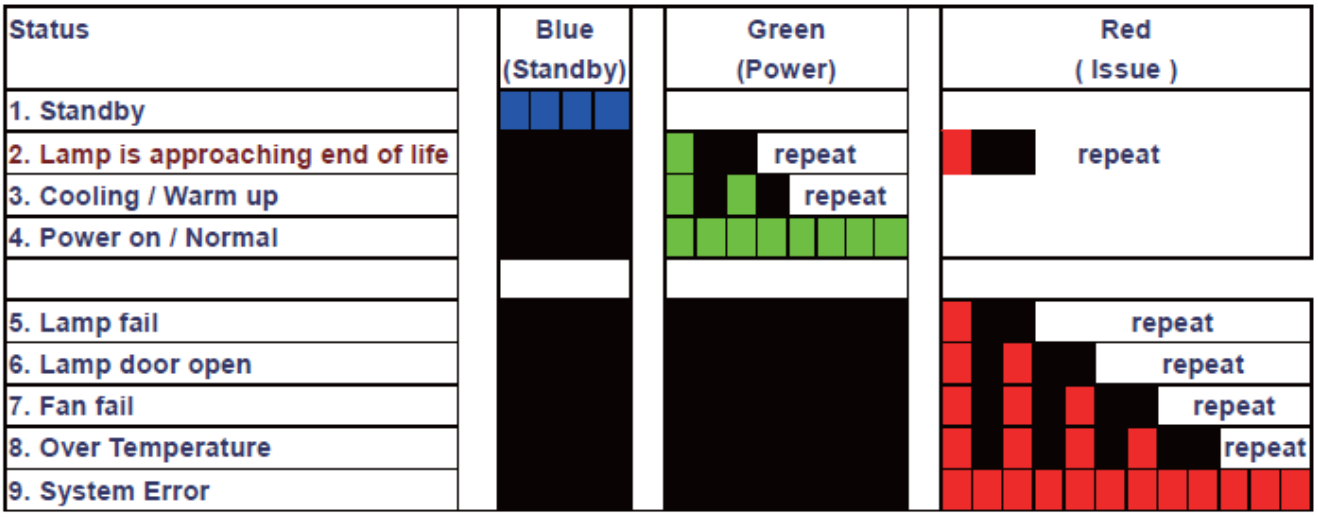
Turns green	This indicates that the projector has been turned on and is working normally.
Flashes in green	This indicates that the projector is currently warming up or cooling down and will not respond to button operations.
The indicator is off	This indicates that the projector is currently in stand by mode.

ERROR

Flashes once in red	The projector lamp is faulty; check to see if the lamp is damaged or if it hasn't been properly installed.
Flashes twice in red	The lamp cover is not properly replaced.
Flashes three times in red	The cooling fan inside the projector is not working; seek assistance from a qualified service personnel.
Flashes four times in red	The projector temperature is too high; try cleaning the ventilator slots or unplugging the power cord to resolve the issue.
Flashes five times in red	The projector filter might not have been inserted properly; check the ventilation slot and make sure the filter has been properly replaced and inserted.

Warning

Flashes once in green and red: The lamp is approaching the end of life. It should be replaced with a new lamp.



Remark:

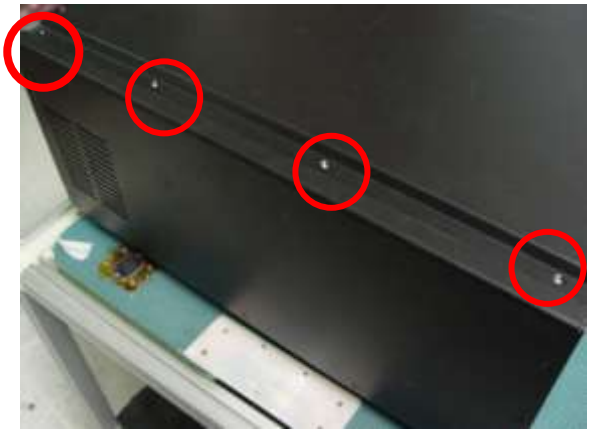
The time period of each step in the above LED blinking pattern is 500 milliseconds, e.g., for"Cooling / Warm up"state, the green LED will ON for 500 milliseconds, and then OFF 500 milliseconds, and then repeat the above LED pattern.

4. KEY PART REPLACEMENT & WIRE DRESSING

4-1 Top Cover

Loosen 3 screws on the front of top cover.

Loosen 3 screws on the back of top cover.



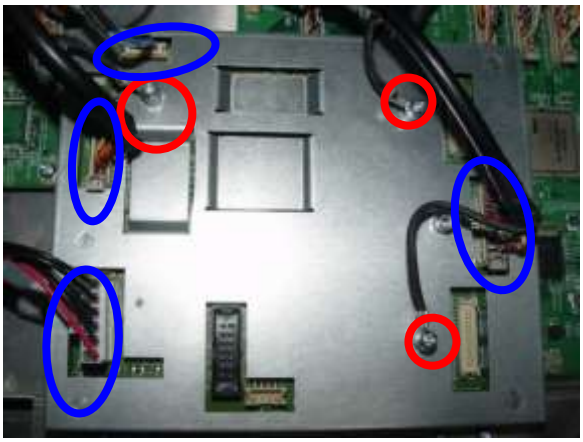
Loosen 4 screws on the right of top cover.

Loosen 4 screws on the left of top cover.

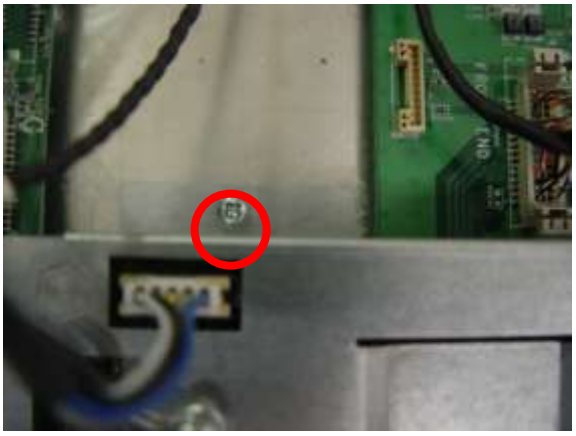
Open the top cover.

Take out the top cover.

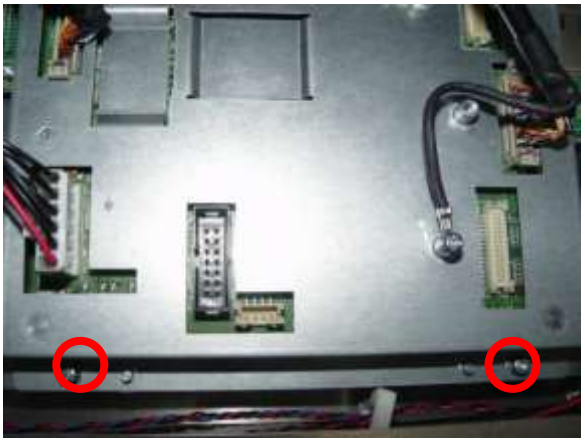
4-2 W2 Board



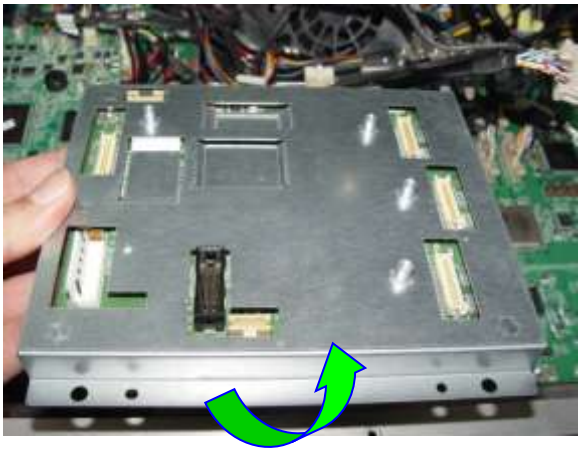
Loosen 3 screws and unplug 4 connectors on the W2 board.



Loosen 1 screw under the top of W2 board.



Loosen 2 screws under the bottom of W2 module.



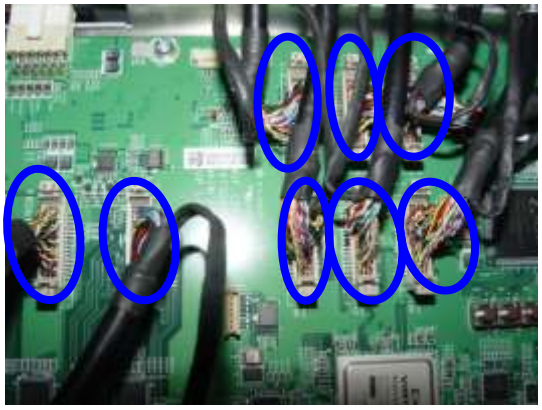
Take out the W2 module.

Take out the cover and loosen 5 screws on the W2 board.

Take out the W2 board.

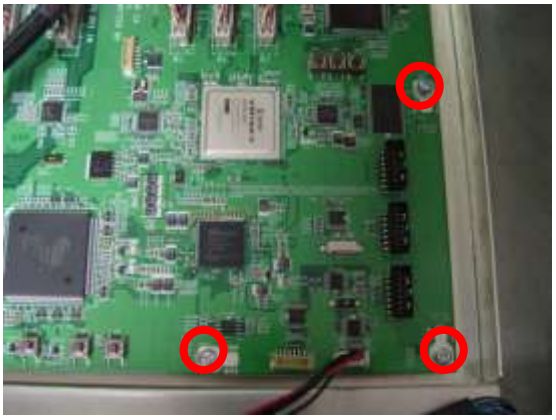
4-3 Main Formatter Board

Unplug 1 connector on the Main formatter board.

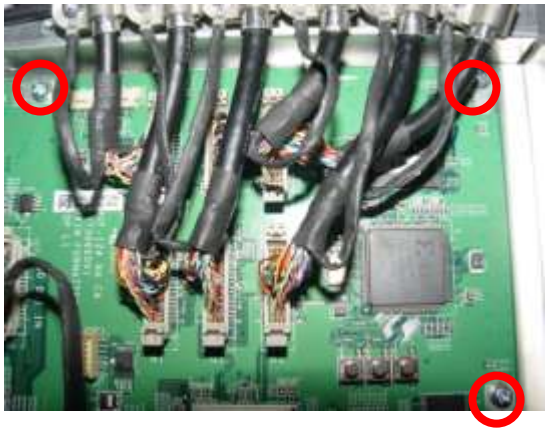


Unplug other 8 connectors on the Main formatter board.

Loosen 3 screws on the left side of Main formatter board.



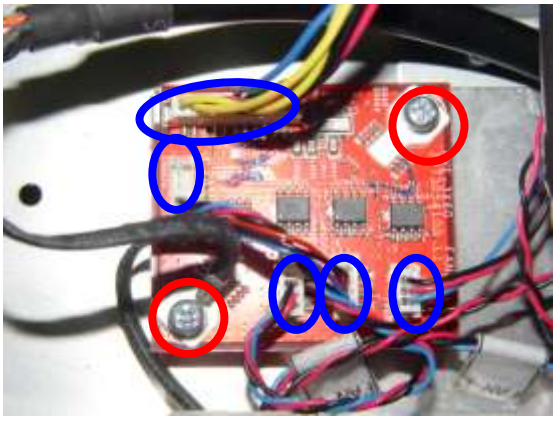
Loosen 3 screws on the right side of Main formatter board.



Loosen 3 screws on the top right side of Main formatter board.

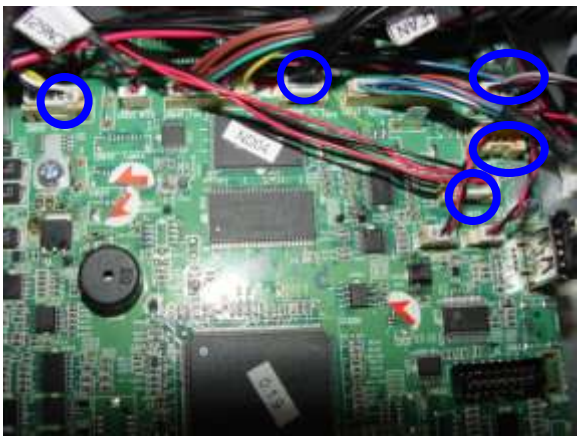
Take out the Main formatter board.

4-4 Fan E Board & Slave Board & RJ-45 Board



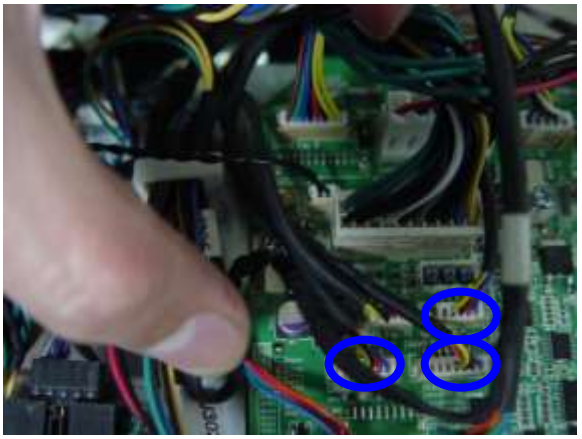
Loosen 2 screws and unplug 5 connectors on the Fan E board.

Take out the Fan E board.



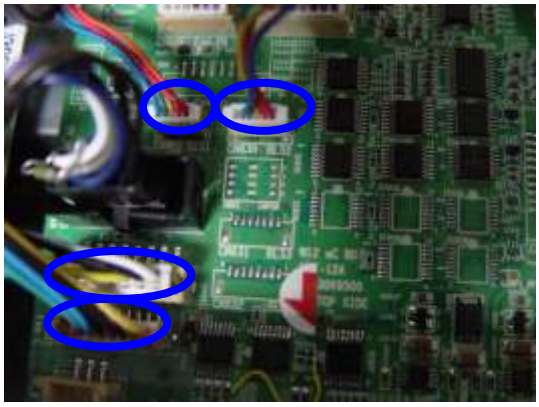
Loosen 6 screws on the I/O terminal of the slave board on the left cover.

Unplug 10 connectors on the top right of Slave board.



Unplug 5 connectors on the top left of Slave board.

Unplug 5 connectors on the top left of Slave board.



Unplug 4 connectors on the bottom left of Slave board.

Loosen 3 screws on the Slave board.

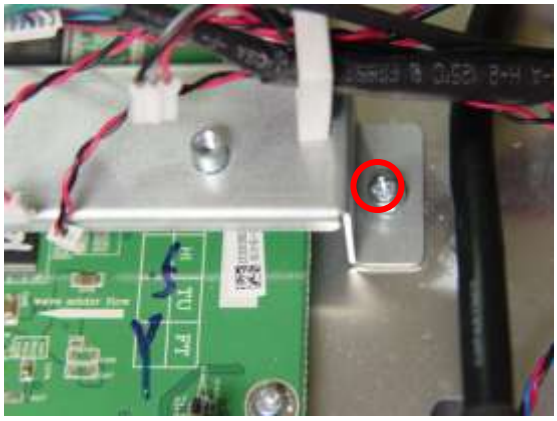
Take out the Slave board.

Loosen 1 screw and unplug 1 connector on the RJ-45 board, and then take out it.

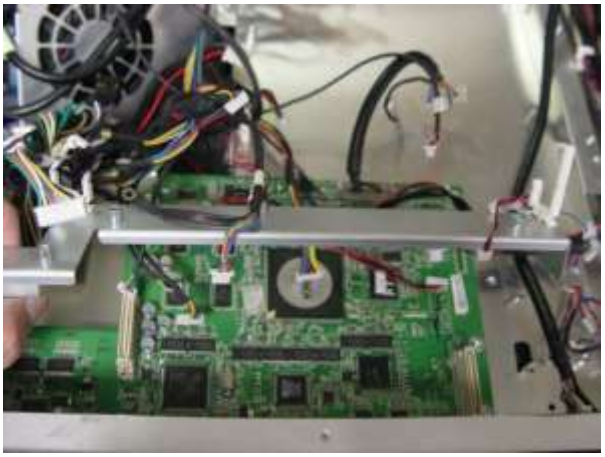
Loosen 1 screw on the RJ-45 terminal of left cover.

Take out the RJ-45 board.

4-5 Video Board & DUAL Link DVI (3D) Board



Loosen 1 screw under the right of the brace of video board.



Take out the brace.

Loosen 1 screw under the left of the brace of video board.

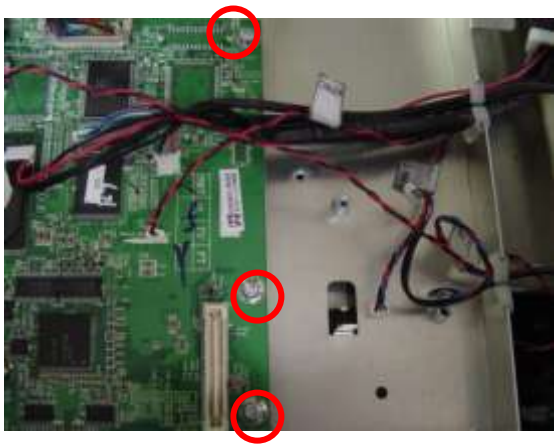
Loosen 2 screws on the DVI terminal of left cover.

Unplug 1 connector on the DUAL Link DVI (3D) board.

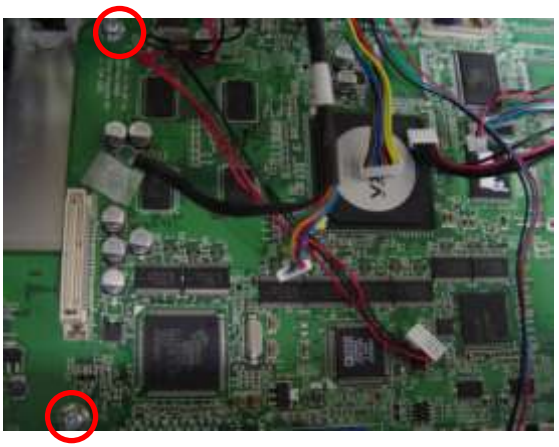
Take out the DUAL Link DVI (3D) board.

Loosen 9 screws on the I/O terminal of the video board on the left cover.

Unplug 1 connector on the video board.



Loosen 3 screws on the right side of the video board.

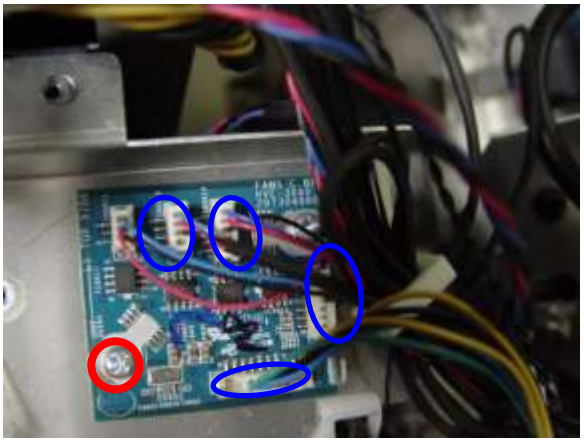


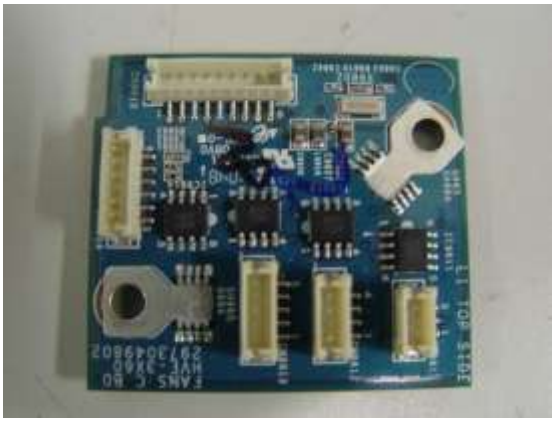
Loosen 2 screws on the left side of the video board.

Remove the video board from projector.

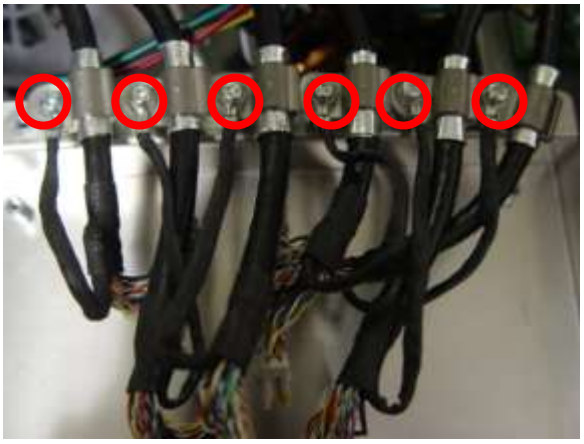
Take out the video board.

4-6 Fan C Board & Bracket Plate

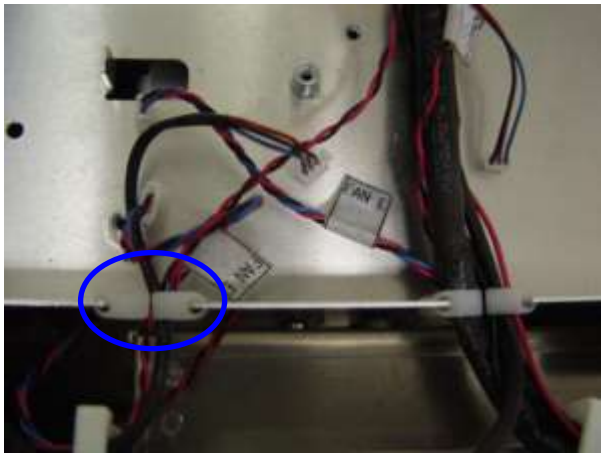




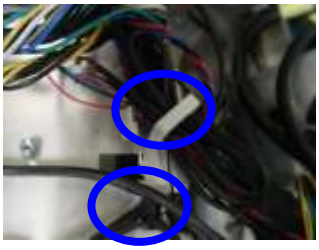
Unplug the 5 connectors and loosen 2 screws on the Fan C board.



Take out the Fan C board.

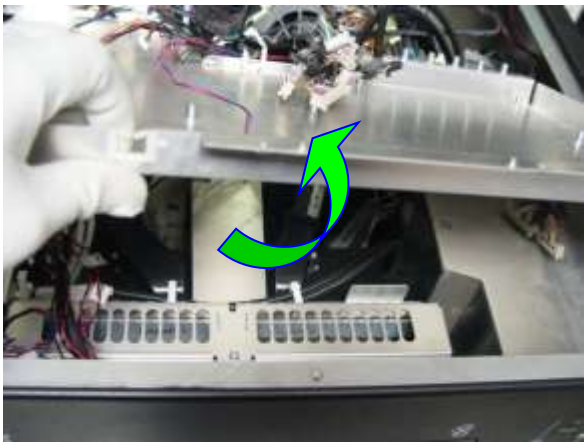


Loosen 6 screws on the FIP signal cable in the bracket.



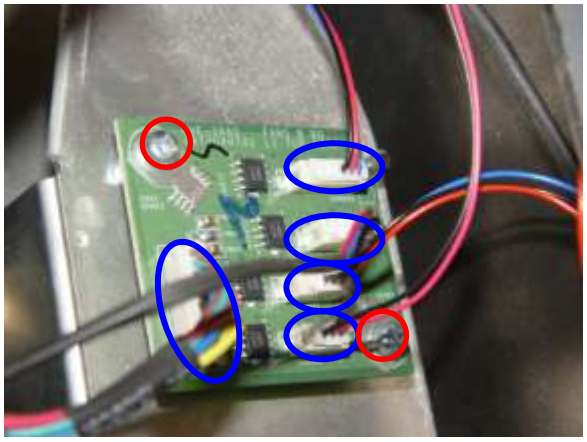
Take out the 2 group cables from fasten tie and 1 group cables concave space in the bracket.

Take out the 2 group cables from concave space in the bracket.



Take out the bracket.

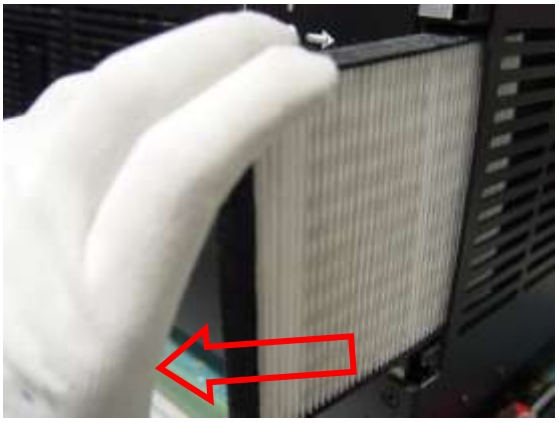
4-7 Fan B Board & Filter & Lamp 1 & Lamp 2 & Fan 2 & Fan 3



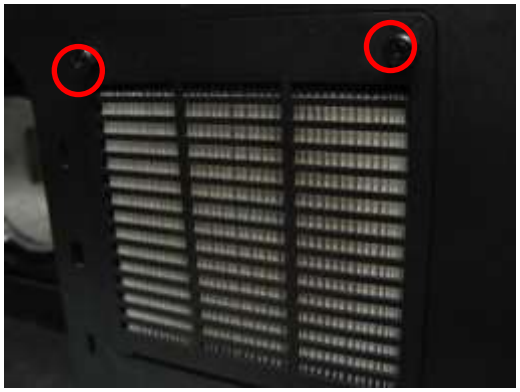
Unplug the 5 connectors, and loosen 2 screws on the Fan B board.

Take out the Fan B board.

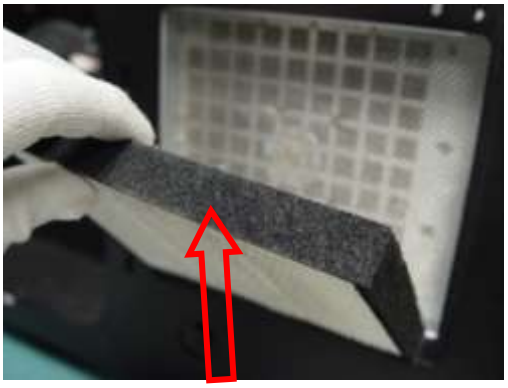
Loosen 2 screws on the ventilation slot of rear cover. Then, open the cover.



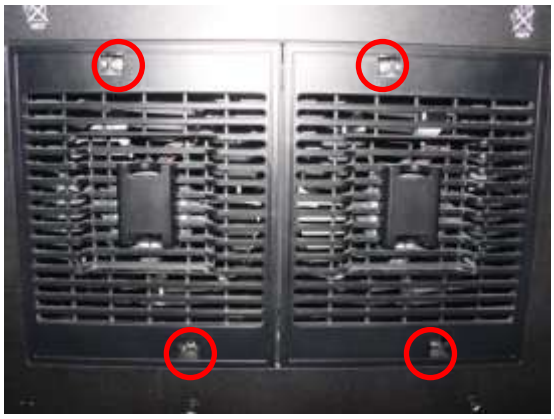
Take out the filter.



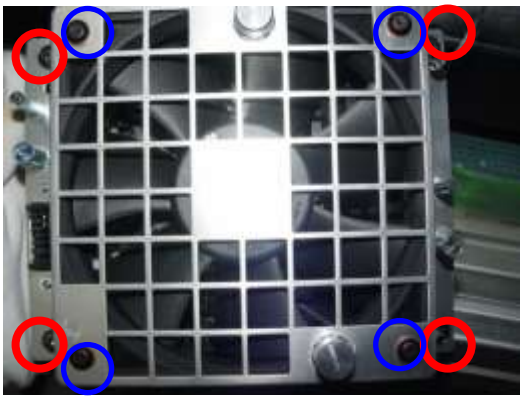
Loosen 2 screws on the ventilation slot of front cover. Then, open the cover.



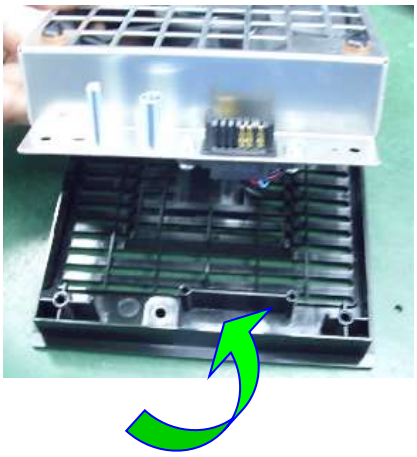
Take out the filter.



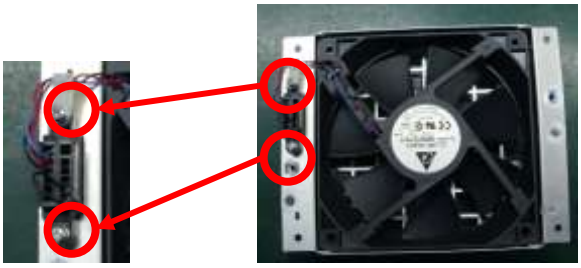
Loosen 4 screws on the Fan 2 & Fan 3 module of back cover.



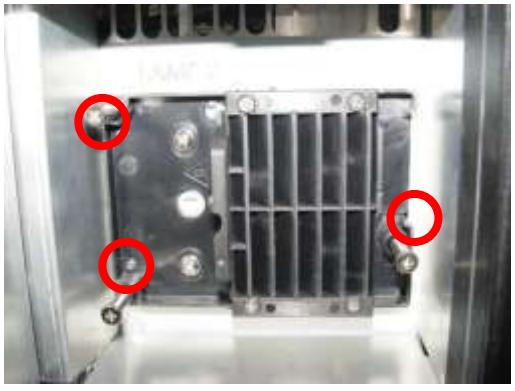
Take out the Fan 3 module. And, loosen 4 screws on it and open the cover, then loosen 4 plastic pin.



Open Fan 3 module.

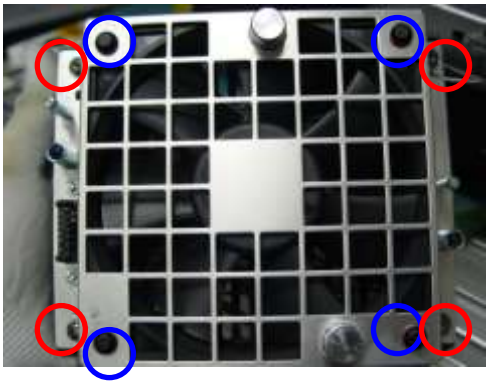


Loosen 2 screws on the Fan 3, and then take off Fan 3.

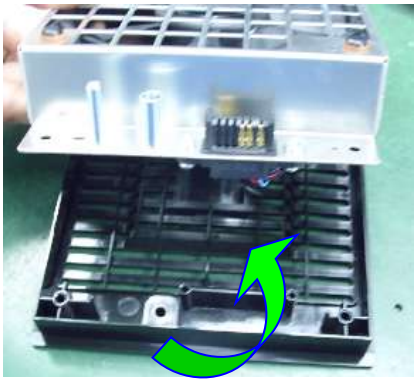


Loosen 3 screws on Lamp 2 module.

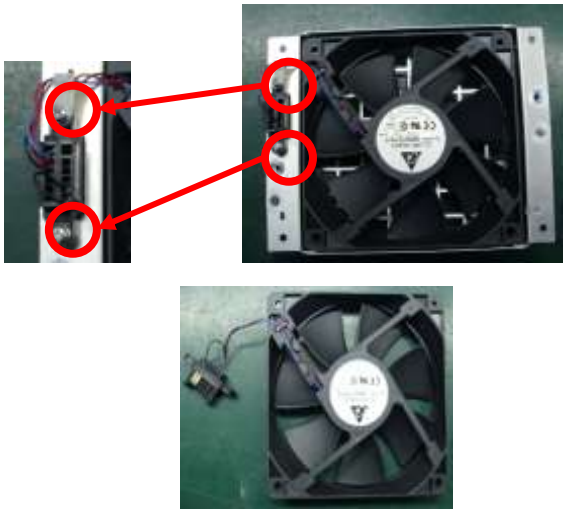
Take out the Lamp 2 module.



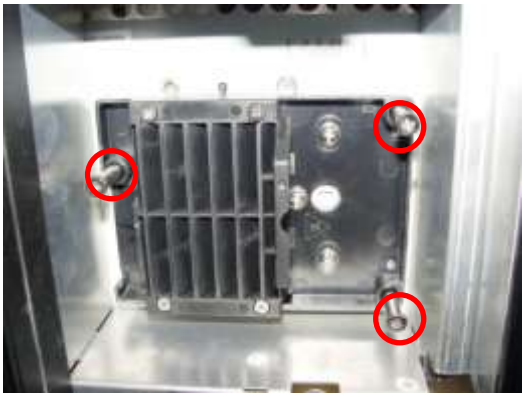
Take out the Fan 2 module. And, loosen 4 screws on it and open the cover, then loosen 4 plastic pin.



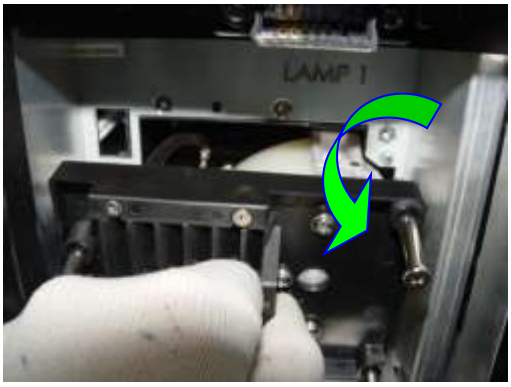
Open Fan 2 module.



Loosen 2 screws on the Fan 2, and then take off Fan 2.



Loosen 3 screws on Lamp 1 module.

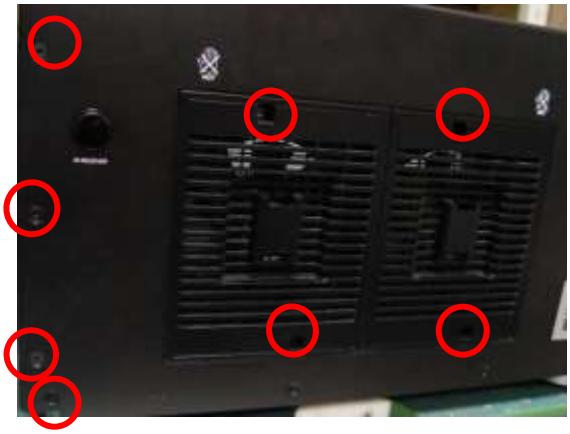


Take out the Lamp 1 module.

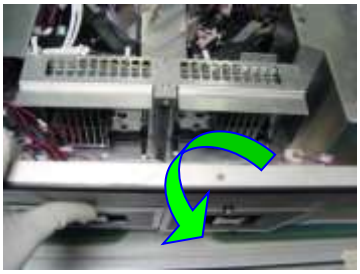
Take off the Lamp1 & Lamp 2 module.

4-8 Back Cover & Keypad & Rear IR Board

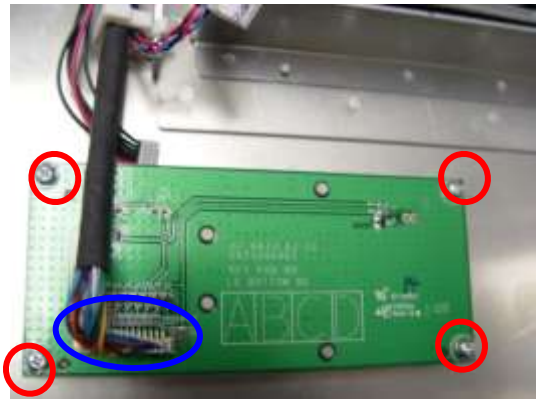
Loosen 4 screws on the right and bottom side of cover.



Loosen 8 screws on the left side of cover and two Fan modules.



Take off the back cover.



Loosen 4 screws and unplug 1 connector on the rear cover.

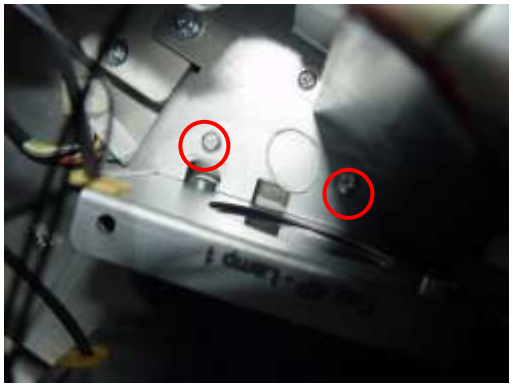
Loosen 1 screw and unplug 1 connector on the rear cover.

Take off the Keypad & Rear IR Board.

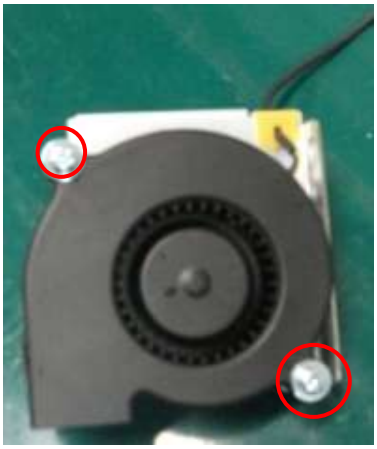
4-9 Fan 20 & Fan 21 & Fan 22 & Fan 23

Loosen 3 screws on the Fan 20.

Loosen 2 screws on the Fan 20. Then, take off Fan 20.



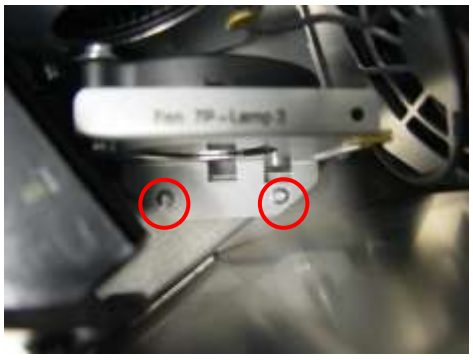
Loosen 2 screws on the Fan 21.



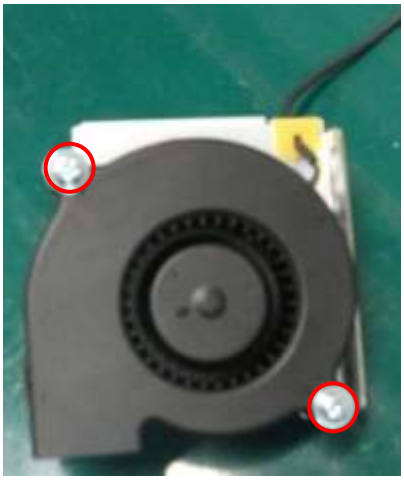
Loosen 2 screws on the Fan 21. Then, take off Fan 21.

Loosen 3 screws on the Fan 22.

Loosen 2 screws on the Fan 22. Then, take off Fan 22.

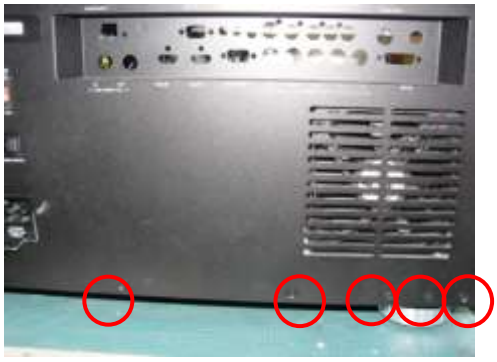


Loosen 2 screws on the Fan 23.

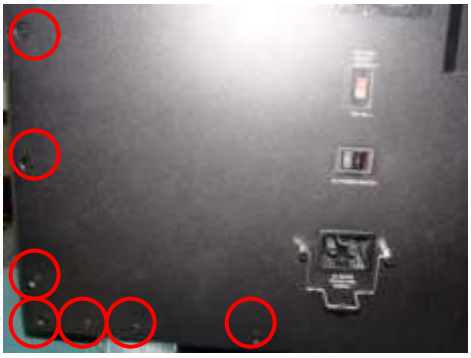


Loosen 2 screws on the Fan 23. Then, take off Fan 23.

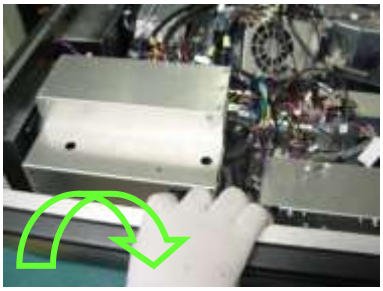
4-10 Left Cover & Fan 1



Loosen 5 screws on the bottom side of left cover.



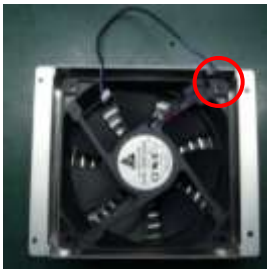
Loosen 7 screws on the left side of left cover.



Take off the left cover.

Loosen 4 screws on the Fan 1 module of left cover.

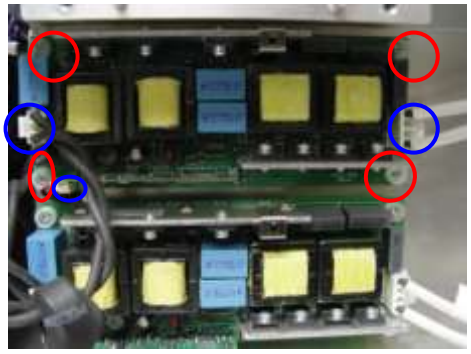
Loosen 4 plastic pin on the Fan 1 module of left cover.



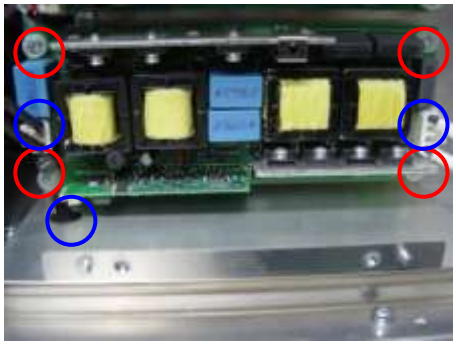
Unplug the cable from bracket and take off the Fan 1.

4-11 Ballast & DC-DC Board & AC Filter Board & Power Board & Fan 8 & Fan 9

Loosen 4 screws on the ballast module cover and then take off it.

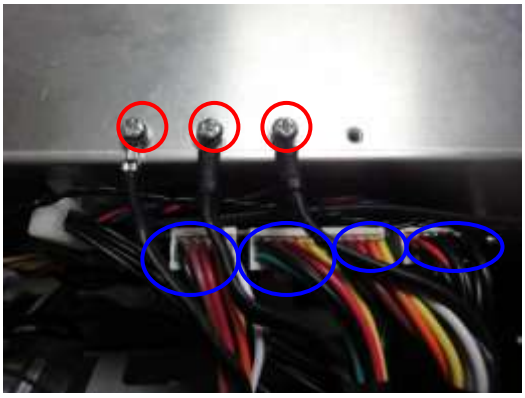


Unplug 3 connectors and Loosen 4 screws on ballast. Then, take off it.



Unplug 3 connectors and Loosen 4 screws on ballast. Then, take off it.

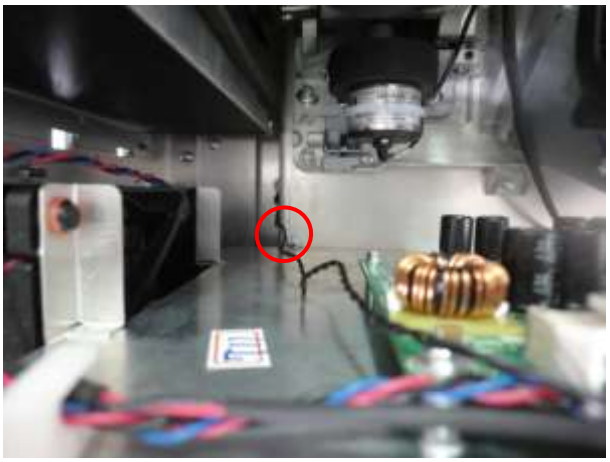
Take out the two ballasts.



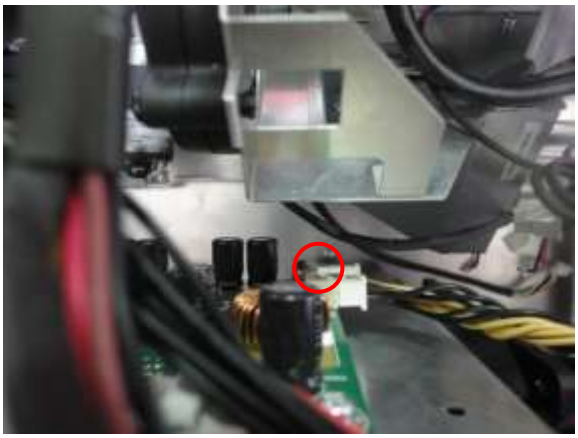
Loosen 3 screws and unplug 4 connectors on the power module and DC-DC board.

Unplug 1 connector and 2 group cables fasten tie on the power module and DC-DC board.

Loosen 2 screws on the top of power module



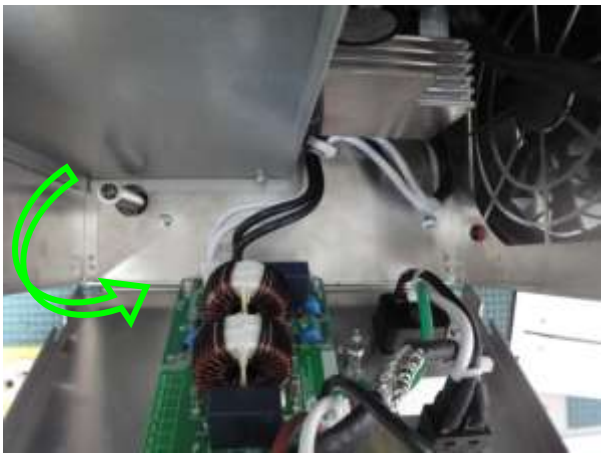
Loosen 1 screw on the left bottom of power module.



Loosen another 1 screw on the right bottom of power module

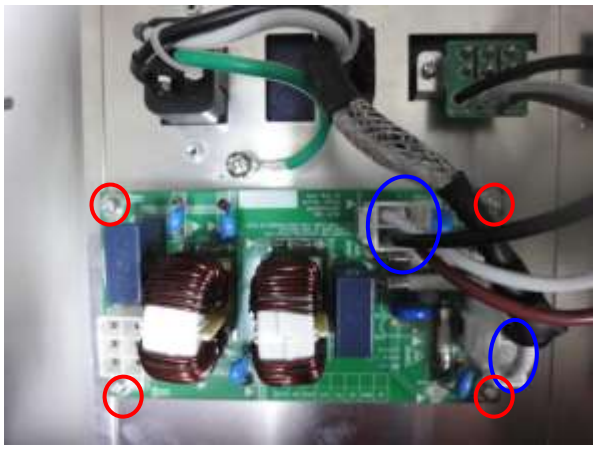
Raise the power module.

Take off the power module.



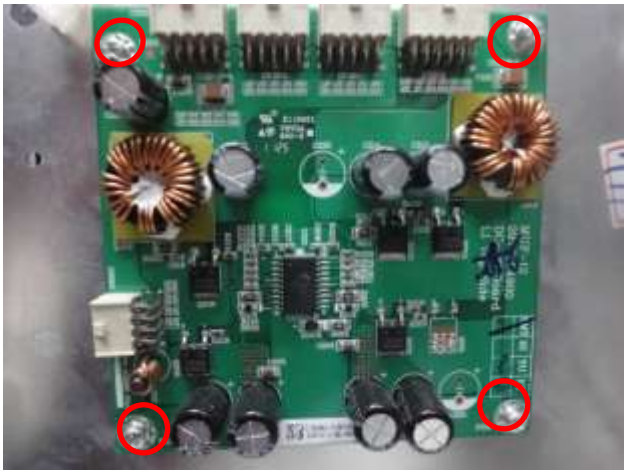
Open the power module.

Unplug 1 connector from AC filter board.



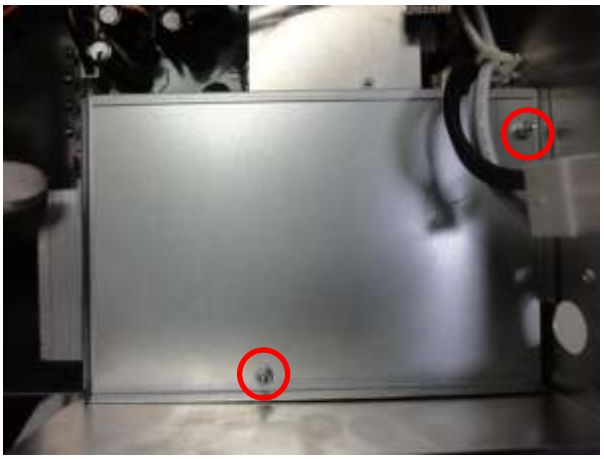
Unplug 2 connectors and loosen 4 screws on the AC filter board.

Take off the AC filter board.



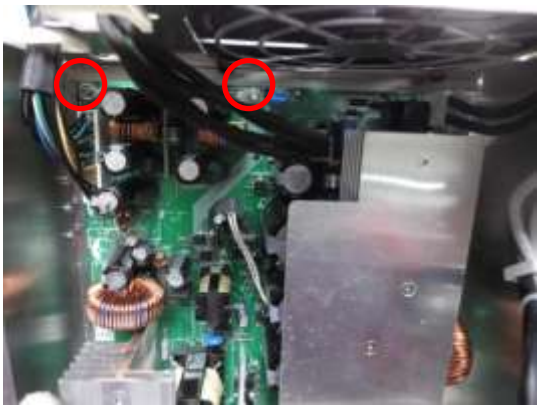
Loosen 4 screws on the DC-DC board.

Take off the DC-DC board.

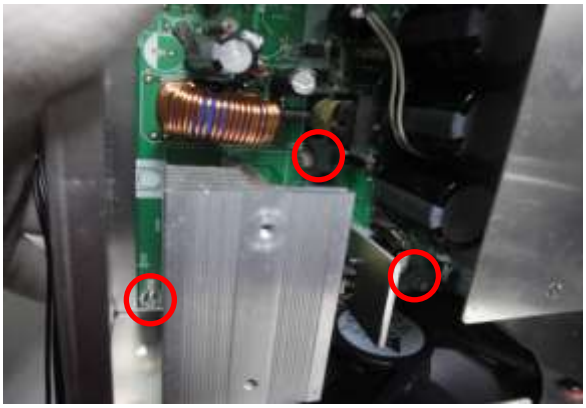


Loosen 2 screws on the inside bracket from power module.

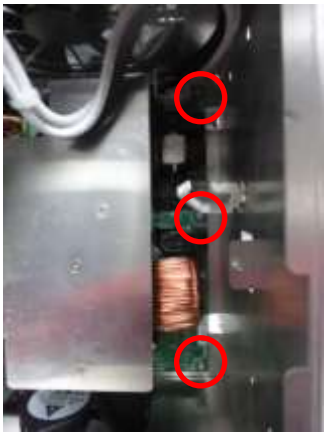
Take off the bracket.



Loosen 2 screws on the top left side of power board.



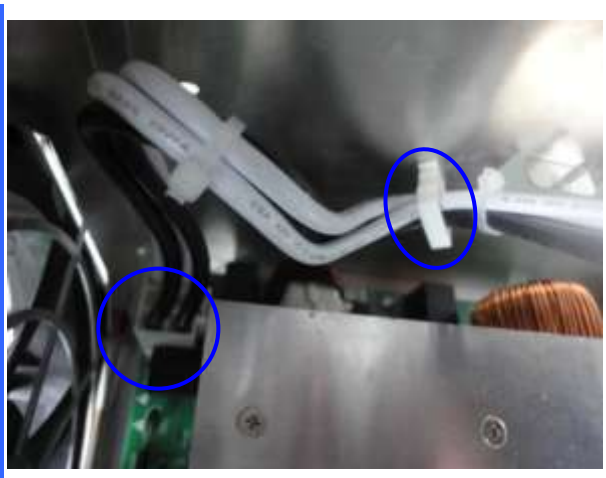
Loosen 3 screws on the bottom left side of power board.



Loosen 3 screws on the left side of power board.

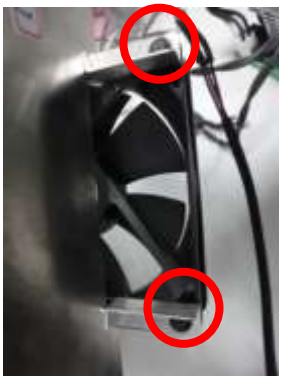
Unplug 1 connector on power board and cable from concave of power module.

Unplug 1 connector on power board and cable from concave of power module.



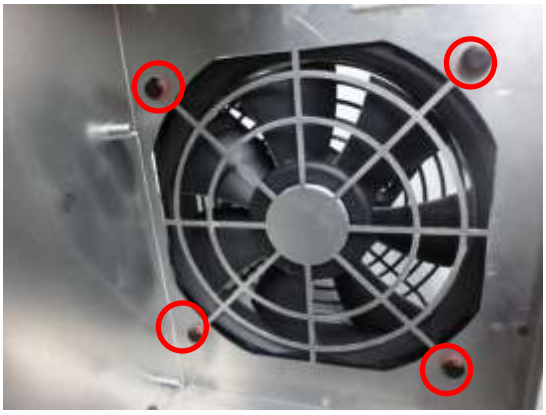
Unplug 1 connector on power board and cable from fasten tie of power module.

Take off the power board.



Loosen 4 plastic pin on the Fan 8 of power module.

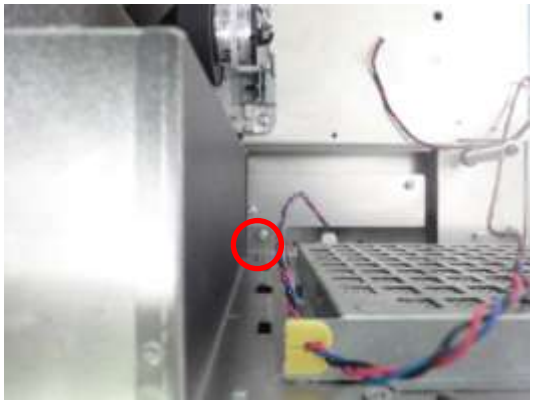
Take off the Fan 8.



Loosen 4 plastic pin on the Fan 9 of power module.

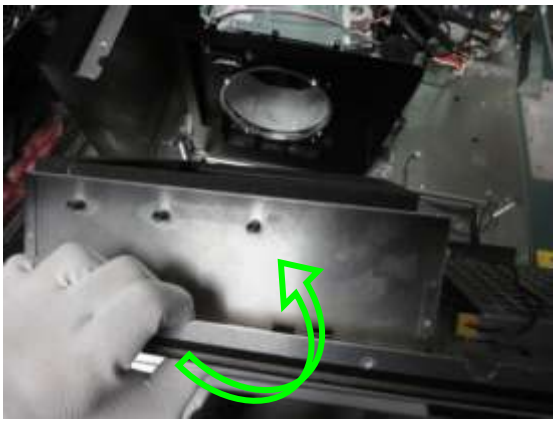
Take off the Fan 9.

4-12 Front Cover & Front IR Board



Loosen 1 screw on right bottom side of front cover.

Loosen 4 screws on the right side of right cover.



Take off the front cover.

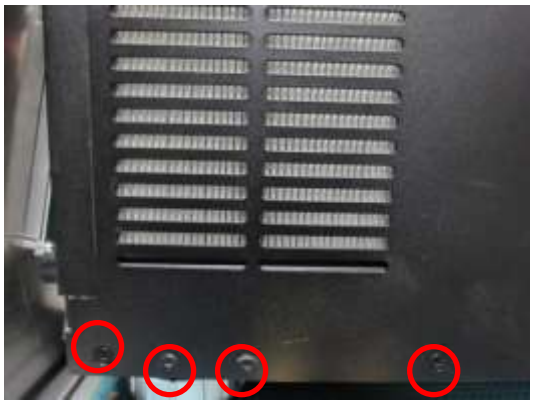
Front Cover

Unplug 1 connector and loosen 1 screw on front IR board.

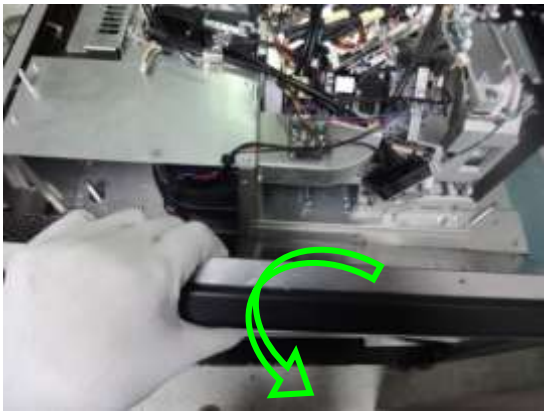
Take off the front IR Board.

4-13 Right Cover & Fan 0

Loosen 6 screws on the right bottom and middle side of right cover.

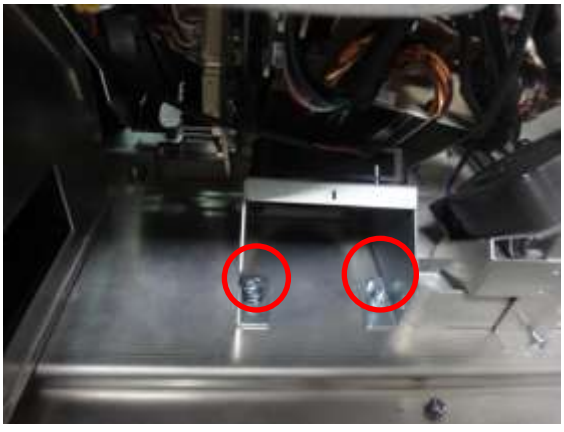


Loosen 4 screws on the left bottom side of right cover.



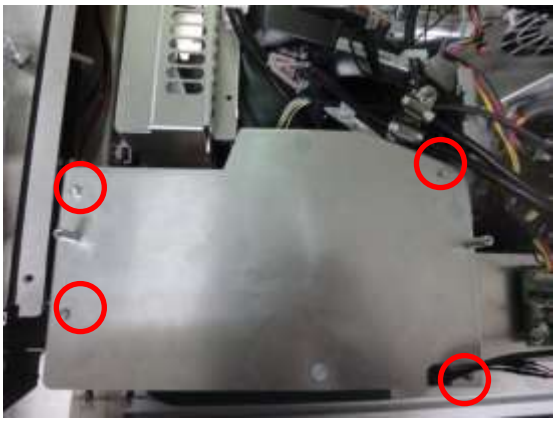
Take off the right cover.

Right Cover

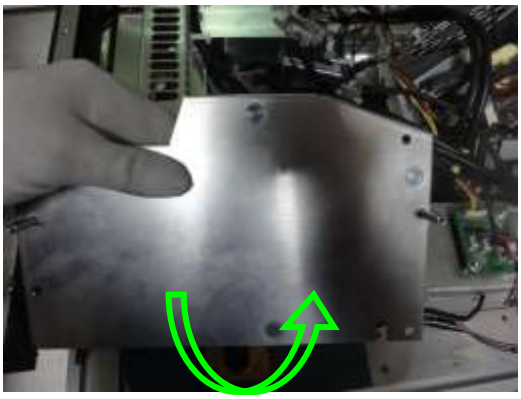


Loosen 2 screws on the bracket of Fan 0.

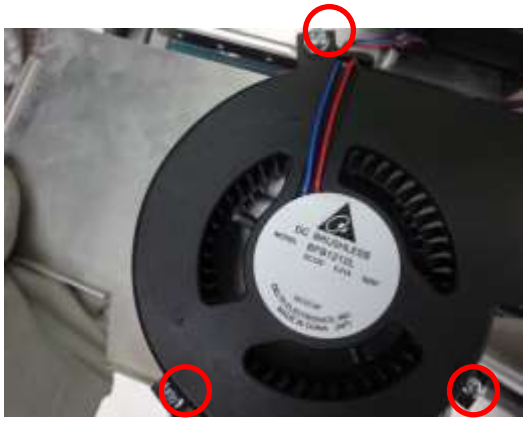
Loosen 4 plastic pin on the bracket of Fan 0, then take off the Fan0.



Loosen 4 screws on the cover of Fan 4.

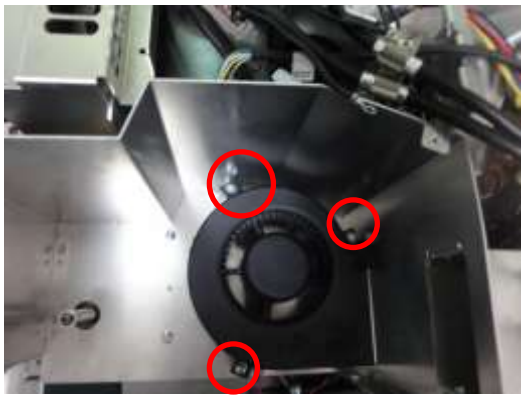


Take off the Fan 4 cover.



Loosen 3 screws on the Fan 4.

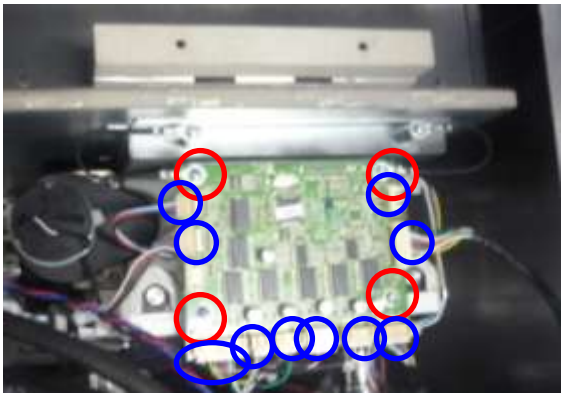
Take off the Fan 4.



Loosen 3 screws on the Fan 5.

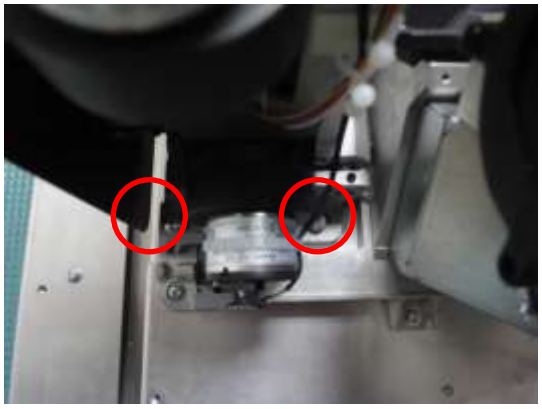
Take off the Fan 5.

4-14 Motor Driver Board & Lens Mount



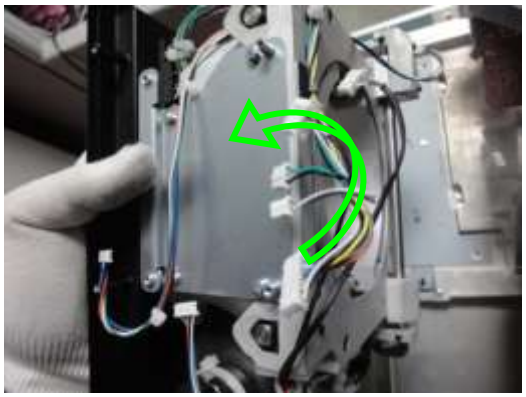
Loosen 4 screws and unplug 10 connectors on the Motor Driver board.

Take off the Motor Driver board.

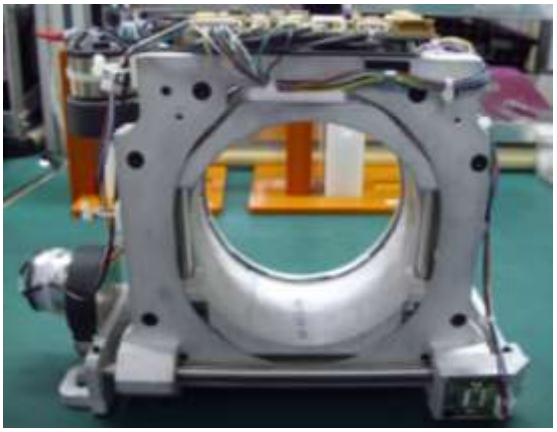


Loosen 2 screws on the left side of Lens Mount.

Loosen other 2 screws on the right side of Lens Mount.



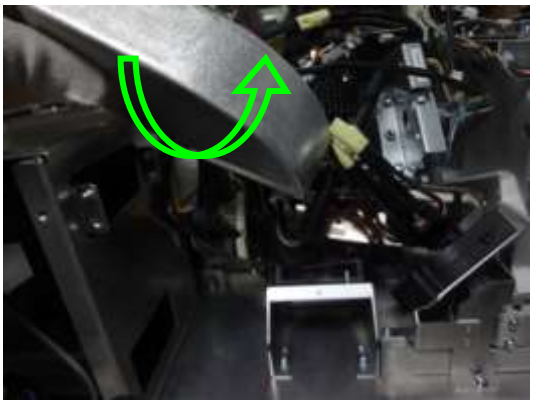
Take off the Lens Mount



Lens Mount

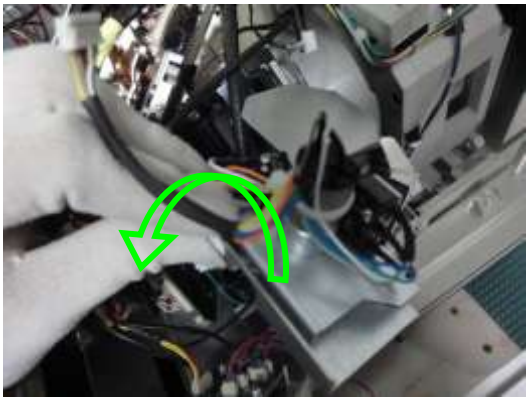
4-15 Prism Flow Channel & Light Shutter & FIP

Loosen 1 screw on the prism flow channel.



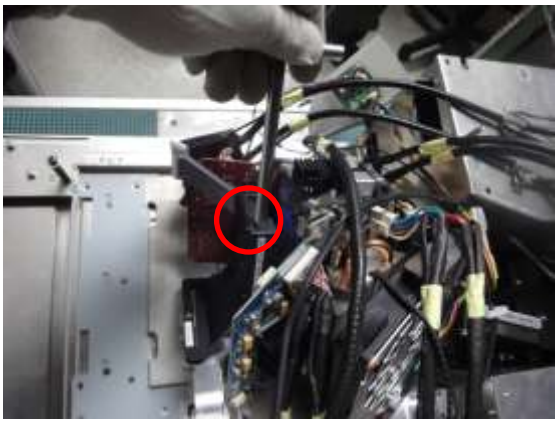
Take off the prism flow channel.

Loosen 2 screws on the Light shutter.



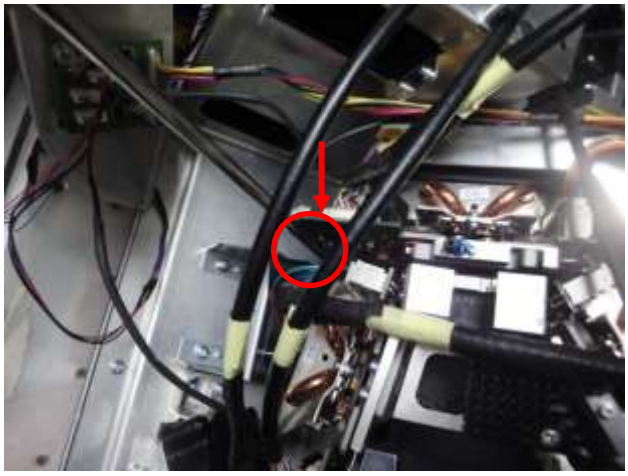
Take off the Light shutter.

Light shutter.



Use T-type tool to screw up the FIP tightly.

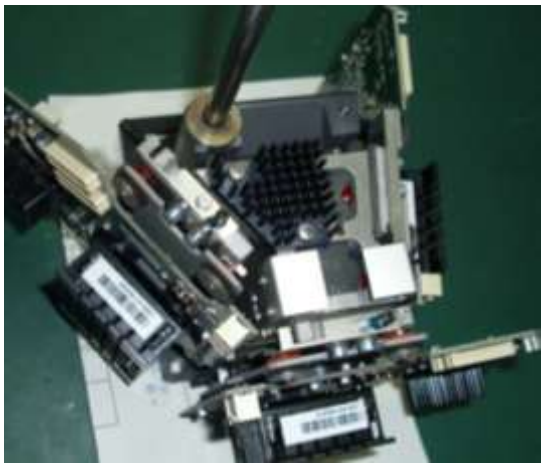
Loosen first screw on the bottom side of FIP.



Loosen second screw on the bottom side of FIP.

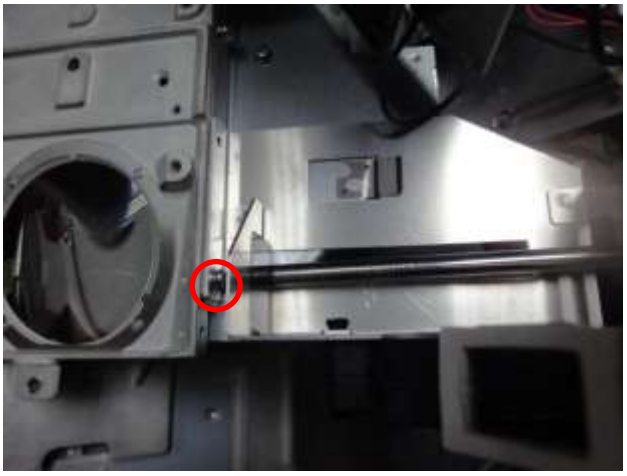
Loosen third screw on the bottom side of FIP.

Take off the FIP.



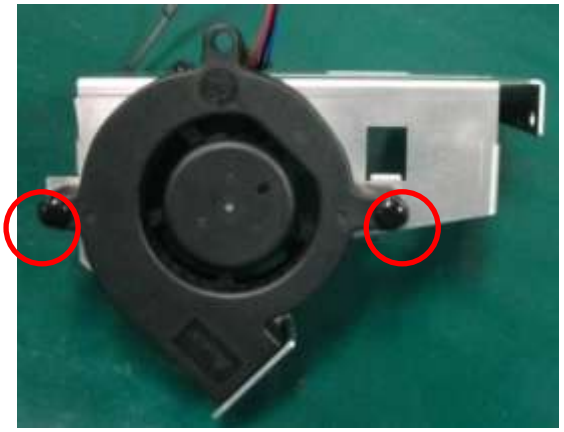
FIP

Loosen first screw on the bottom side of Fan 11 bracket.



Loosen second screw on the bottom side of Fan 11 bracket.

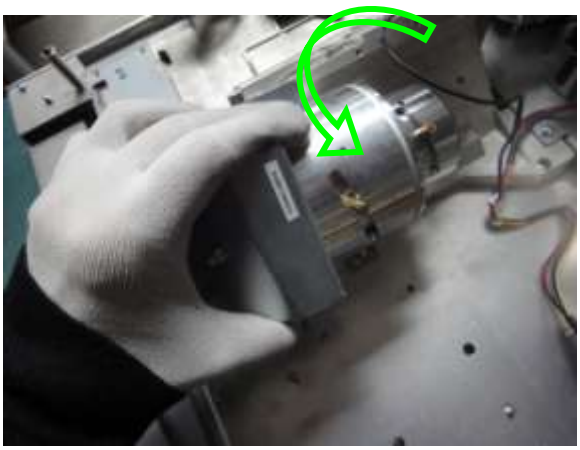
Take off the Fan 11 module.



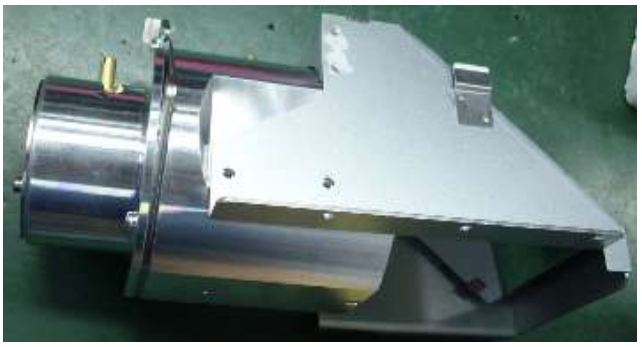
Loosen 2 plastic pins on the Fan 11 bracket. And, take off the Fan11.

Loosen 1 screw on the left bottom side of the illumination.

Loosen 3 screws on the right bottom side of the illumination.



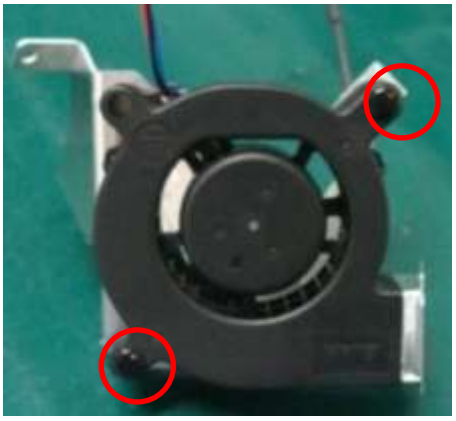
Take off the illumination.



Illumination

Loosen 2 screws on the bottom side of the Fan 7 bracket.

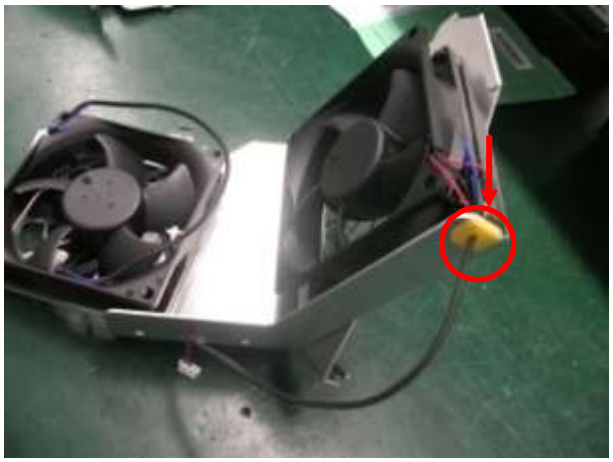
Take off the Fan 7 module.



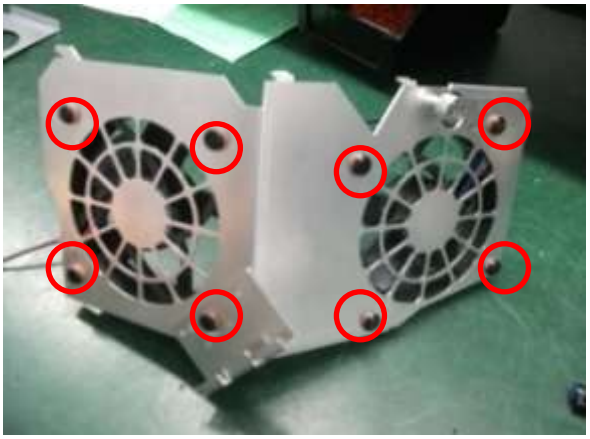
Loosen 2 plastic pins on the Fan 7 bracket. And, take off the Fan 7.

Loosen 2 screws on the bottom side of the Fan 6 & Fan 10 bracket.

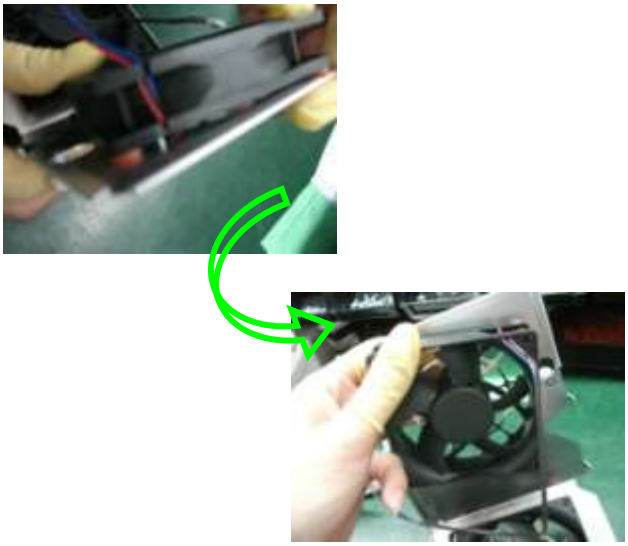
Take off the Fan 6 & Fan 10 module.



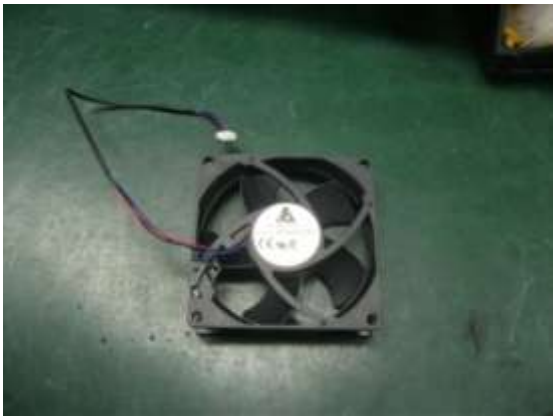
Unplug the cable from Fan 6 location of yellow concave.



Loosen eight plastic pins on the Fan 6 & Fan 10 bracket.

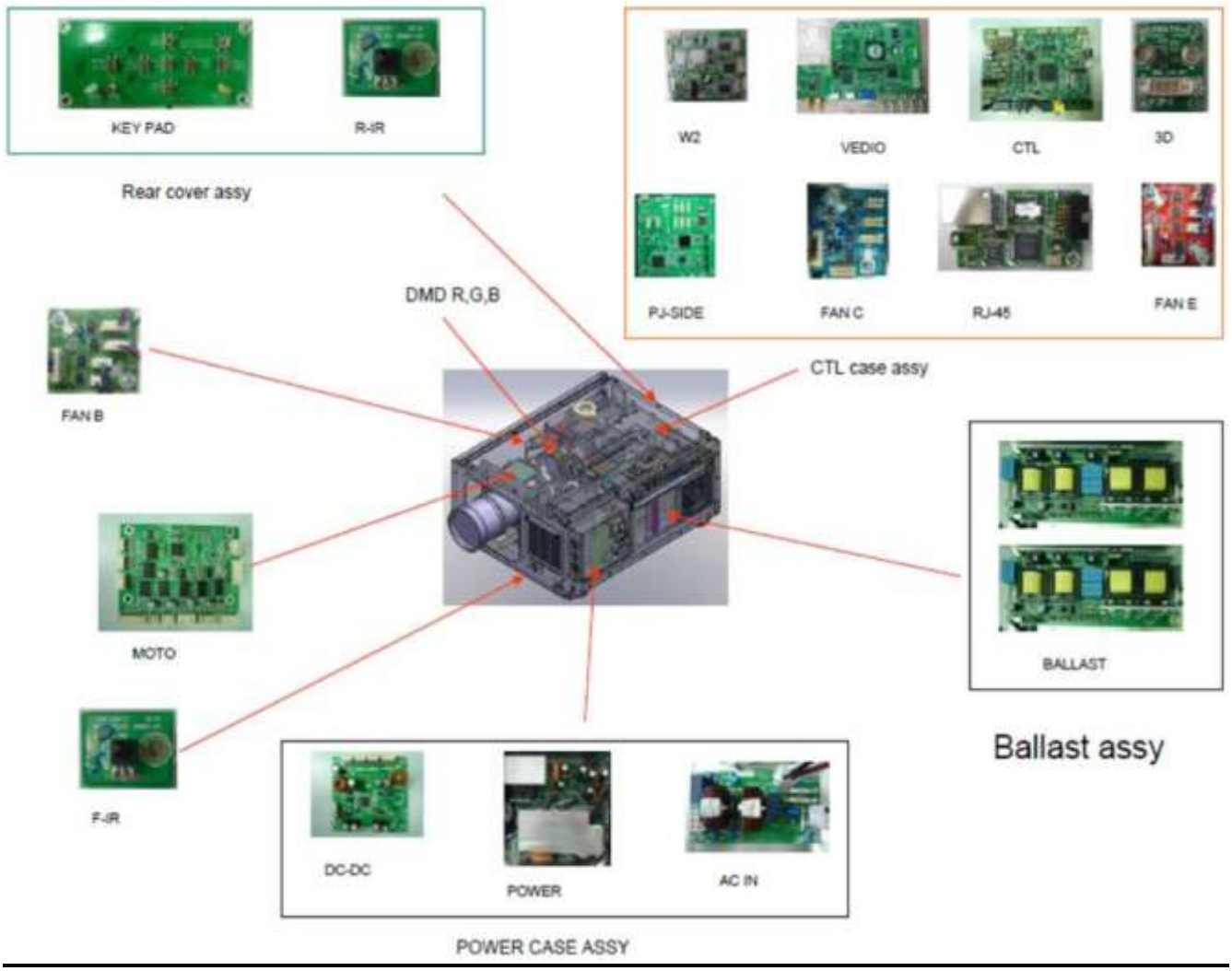


Fan 6 & Fan 10 from bracket.



Fan 6 & Fan 10

4-17 All Module Layout



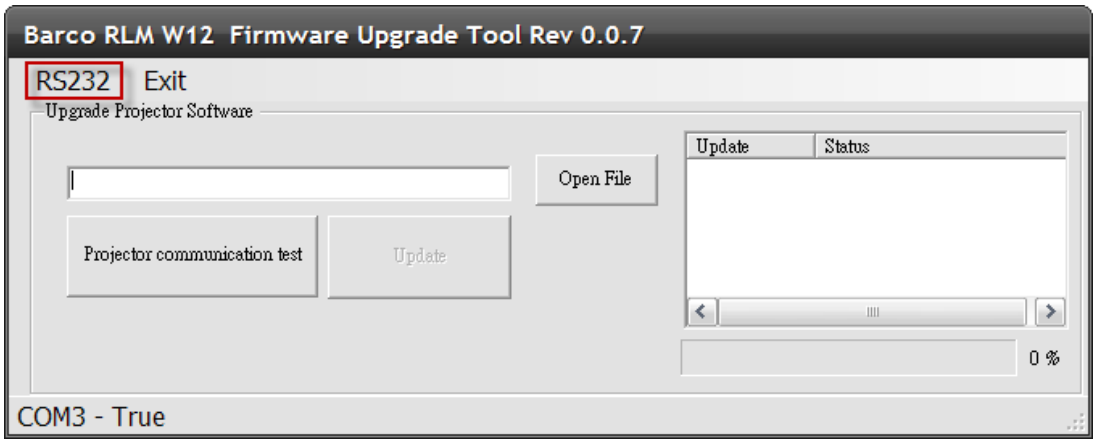
5. PROGRAM SETTING AND SOFTWARE DOWNLOAD

5-1. Firmware Downloads Procedure for Main Formatter Board:

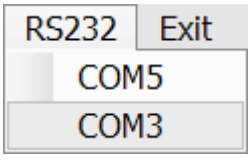
5-1-1. Connect the AC power of the projector and have the projector in standby mode.

5-1-2. Connect the RS-232 cable between the projector and the PC.

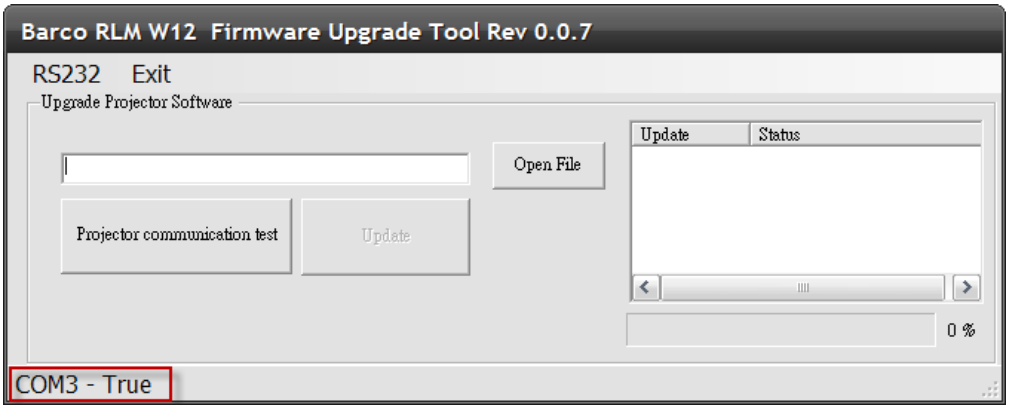
5-1-3. Open the Firmware Upgrade Tool accompanied with the firmware release.



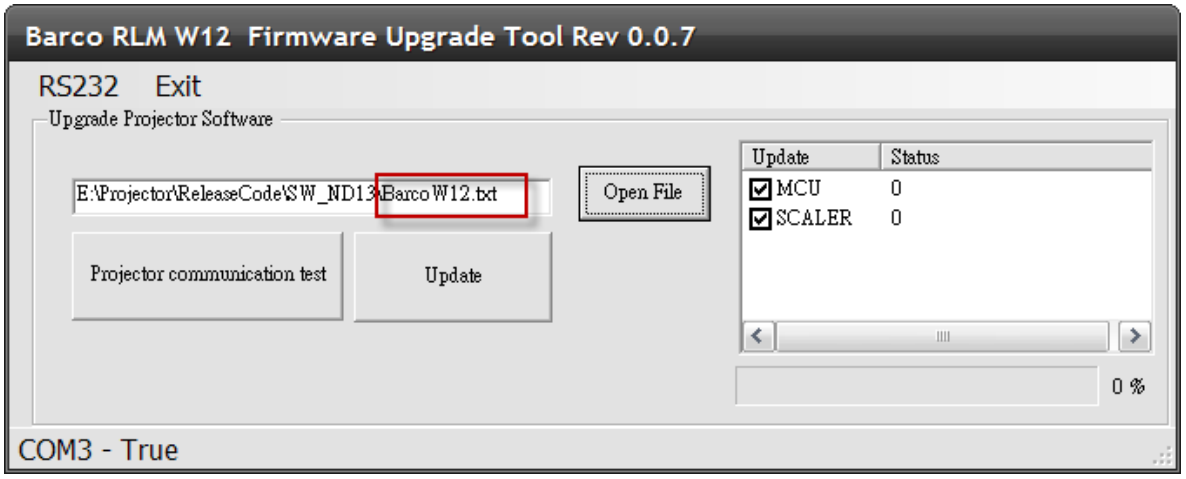
5-1-4. Click the RS232 from menu to select the correct COM port number corresponding to the connection.



5-1-5. Click the "Projector communication test" button for testing the communication with the projector. If everything is OK, the following status bar will be shown.

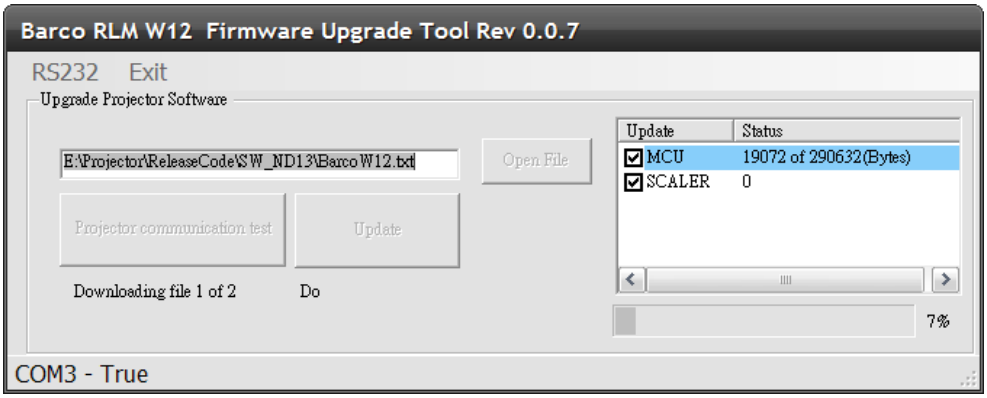


5-1-6. Click the "Open File" button to activate the file selection dialog box and select BarcoW12.txt (or BarcoW112.txt) file under the same folder of the firmware release.

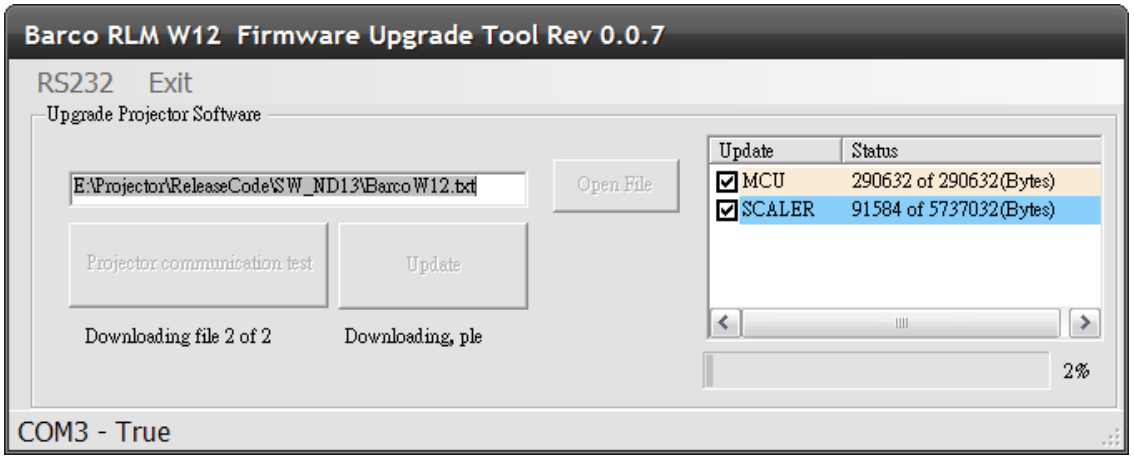


5-1-7. Click “Upgrade SW” to start the firmware upgrades process. Prior to the firmware upgrade process, you will be prompted with a warning dialog box for confirmation and click “Yes” to proceed the firmware upgrade process.

5-1-8. The firmware upgrade process indicator of Micro-Control board (The 1st part of this firmware upgrade process) will be shown as follows.



5-1-9. After finishing the firmware upgrade of the Micro-Control board (1st part), the firmware upgrade process of the video board (2nd part) will be shown as follows.



5-1-10. Depending on the file size of the firmware, it may take about 12 ~ 25 minutes before the firmware upgrading can be finished. The following dialog box will be shown after finishing the firmware upgrade process. Click "OK" button and "Exit" from the menu to exit from the whole firmware upgrade process.

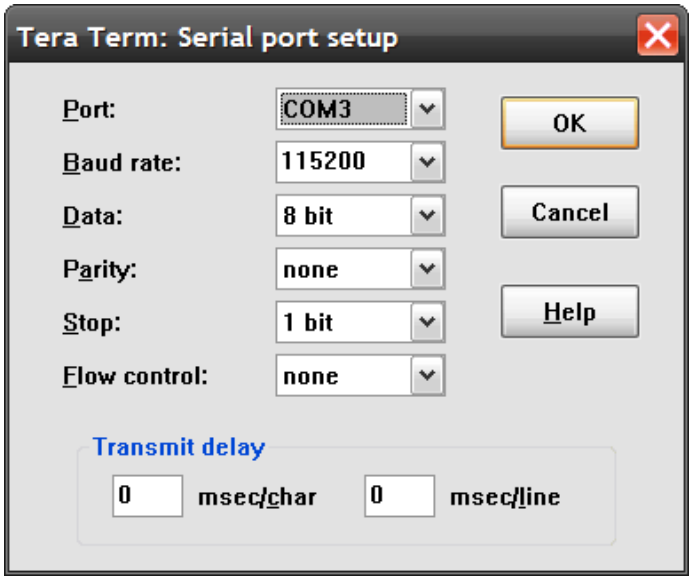
5-1-11. After finishing the firmware upgrade process, please recycle the AC power.

5-2. Firmware Downloads Procedure for sxW2 Board:

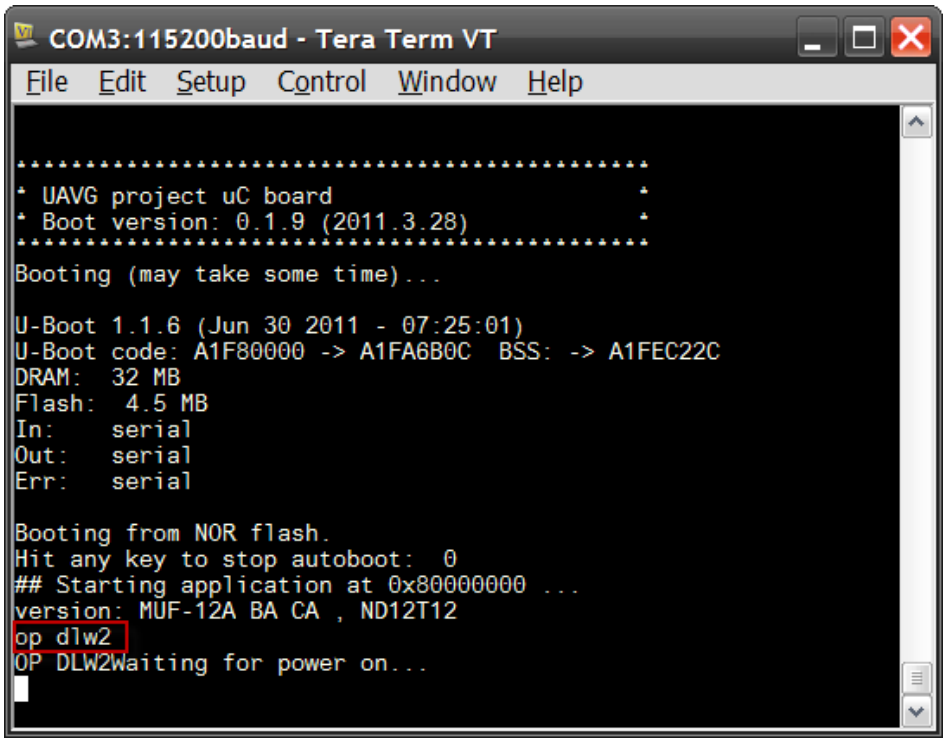
5-2-1. Connect the AC power of the projector and have the projector in standby mode.

5-2-2. Connect the RS-232 cable between the projector and the PC.

5-2-3. Open a terminal program (e.g. Tera Term) with the following setting, baud rate 115200, Databit: 8, Parity: none, Stop: 1 bit, Flow control: none.

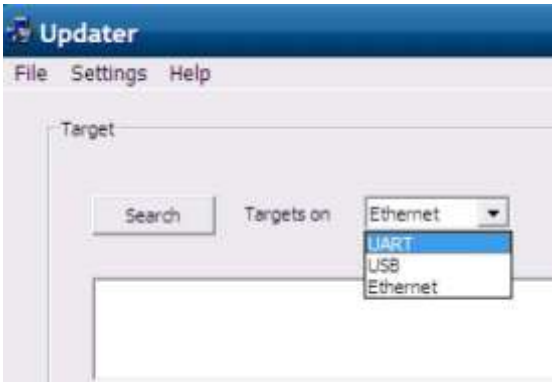


5-2-4. Input the command "op dlw2" on the terminal


COM3:115200baud - Tera Term VT
File Edit Setup Control Window Help
****
* UAVG project uC board *
* Boot version: 0.1.9 (2011.3.28) *
****
Booting (may take some time)...
U-Boot 1.1.6 (Jun 30 2011 - 07:25:01)
U-Boot code: A1F80000 -> A1FA6B0C BSS: -> A1FEC22C
DRAM: 32 MB
Flash: 4.5 MB
In: serial
Out: serial
Err: serial
Booting from NOR flash.
Hit any key to stop autoboot: 0
Starting application at 0x80000000 ...
version: MUF-12A BA CA , ND12T12
op dlw2
OP DLW2Waiting for power on...

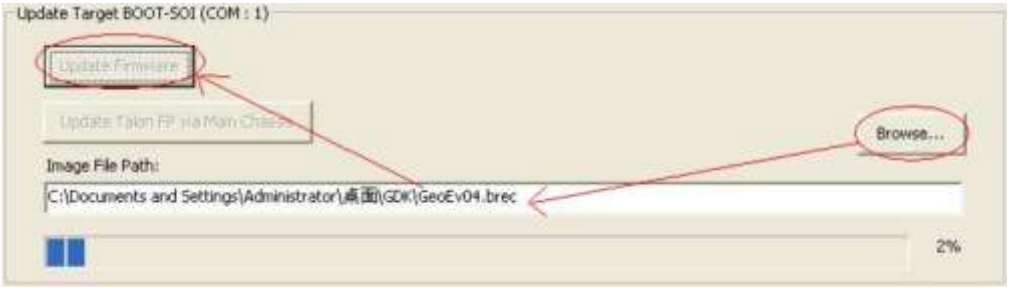
5-2-5. Close and Exit the terminal program.

5-2-6. Activate the sxW2 firmware Updater program for the firmware upgrade of sxW2 chip. And select "UART" in the "Targets on"



5-2-7. Click "Search" button, the available COM port (likes COM:1) will be listed after searching and shown as follows

5-2-8. Click on the available COM port (e.g. COM: 1 in this example) and select the target firmware (Image File) by clicking the "Browse …" button.



5-2-9. After selecting the firmware file, press the “Update Firmware” to start the firmware upgrade process.

5-2-10. The firmware upgrade status will be shown on the status bar of the firmware updater to indicate the progress of this firmware download.

5-2-11. After finishing the firmware download, please recycle the AC switch to finish the overall firmware download process of sxW2.

5-3. Firmware Downloads Procedure for RJ-45 Board:

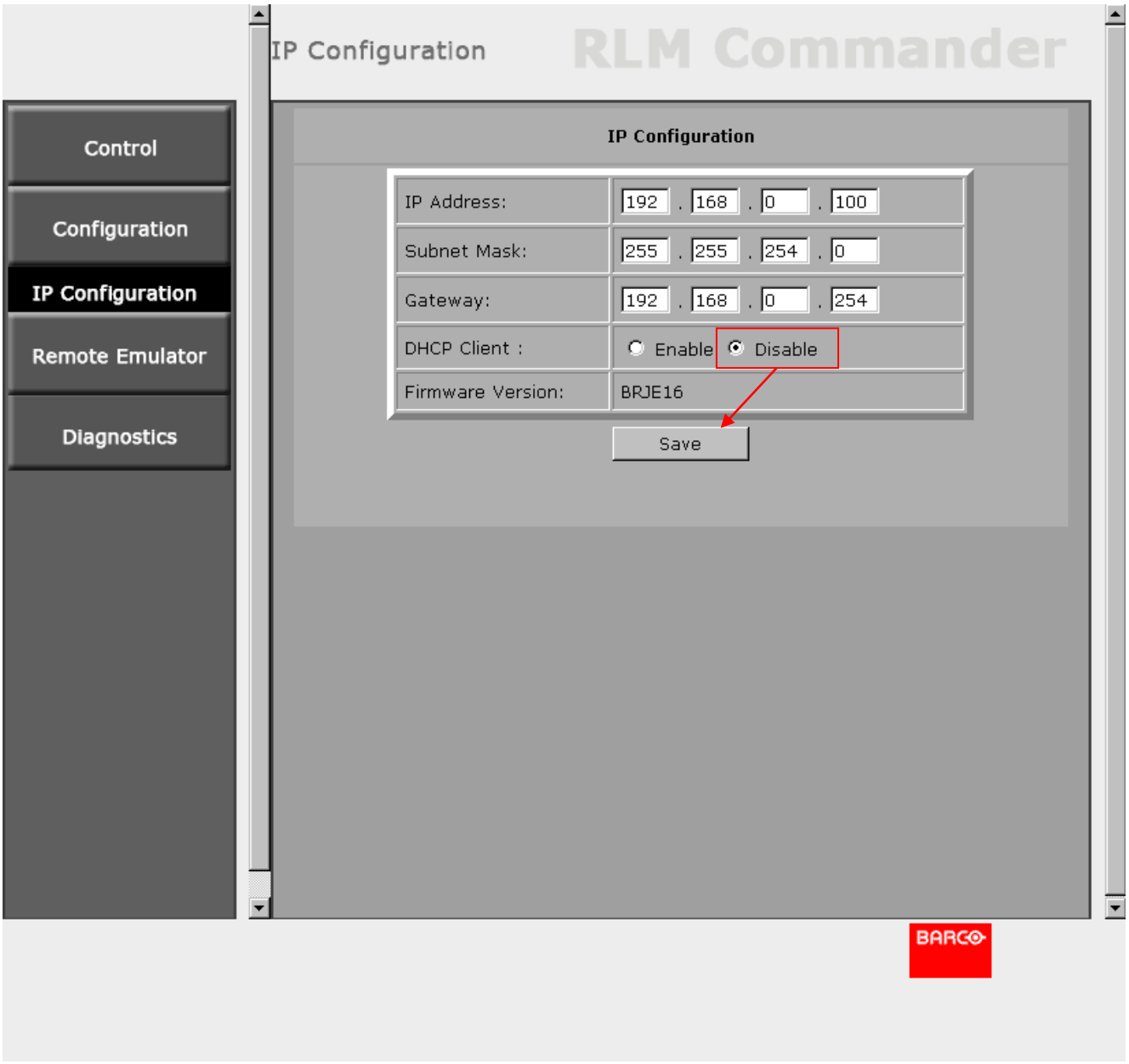
5-3-1. Connect the AC power of the projector and have the projector in standby mode.

5-3-2. Connect the RJ-45 cable between the projector and the PC. And make sure that the two LEDs of the RJ-45 module are lit after connecting the RJ-45 cable between the PC and the projector. If the LEDs are not lit, please send the RS command "eco.net.pow = 0" on the terminal to turn on the RJ-45 module.

5-3-3. Properly setup the IP for the PC and make sure that the PC and the projector are in the same subnet. For example, the default IP of the projector is 192.168.0.100. So the IP of the PC should be set as 192.168.0.99 for example.

5-3-4. Key in the projector IP on the web browser (the recommended web browser is IE 6.0 or later version, the default IP is 192.168.0.100) to see the embedded webpage. The IP can be accessed via the RS command "op net.ipaddr ?" with a terminal program.

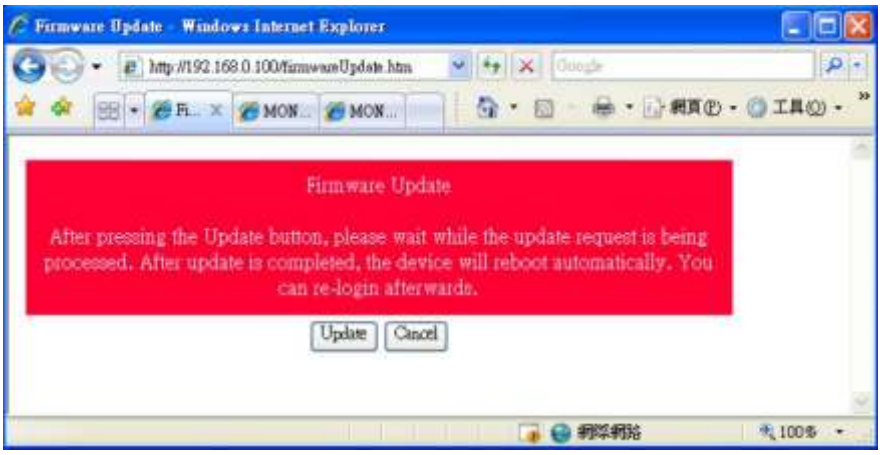
5-3-5. Make sure the DHCP is "Disable", if current state is "Enable", switch it to "Disable" and click "Save" button to save the setting.



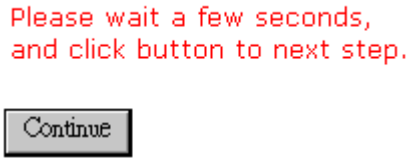
5-3-6. Key in the IP address and followed by "/firmwareUpdate.htm" on the URL box as below to activate the firmware update procedure

http://192.168.0.100/firmwareUpdate.htm

And click the "Update" button to start the firmware upgrade process.


Firmware Update - Windows Internet Explorer
http://192.168.0.100/firmwareUpdate.htm
Firmware Update
After pressing the Update button, please wait while the update request is being processed. After update is completed, the device will reboot automatically. You can re-login afterwards.
Update
Cancel

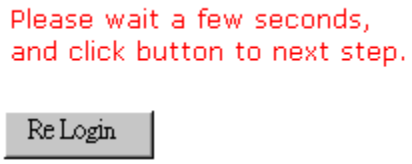
5-3-7. The following message will be shown on the display, click "Continue" button to proceed



5-3-8. Press the "Browse" button and locate the firmware (binary code) to be upgraded. Then press the "Upgrade" button to proceed the download process.

5-3-9. Wait until the firmware upgrade process finished.

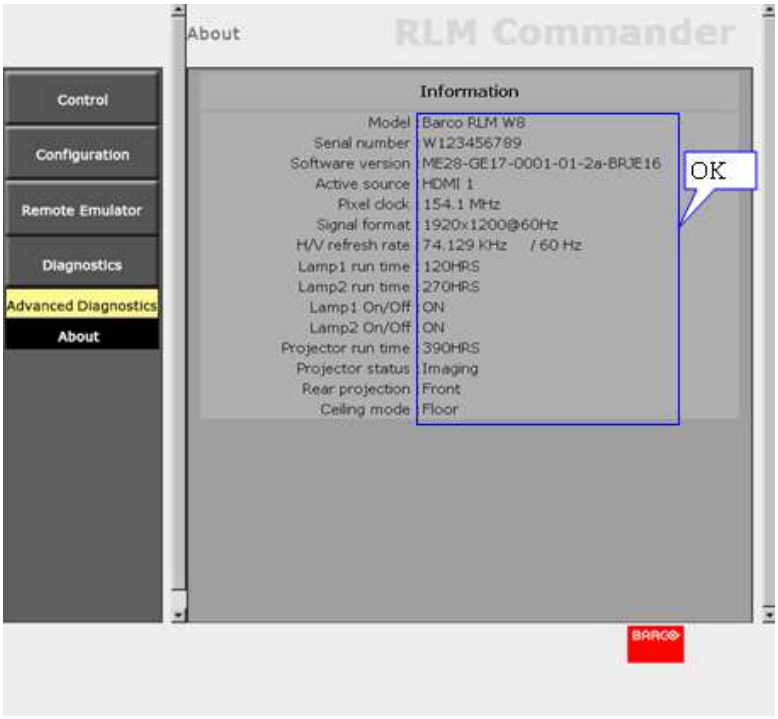
5-3-10. The following message will be shown after the firmware upgrade procedure. Just press the "Re Login" button to finish the whole firmware upgrade process of RJ-45 module.

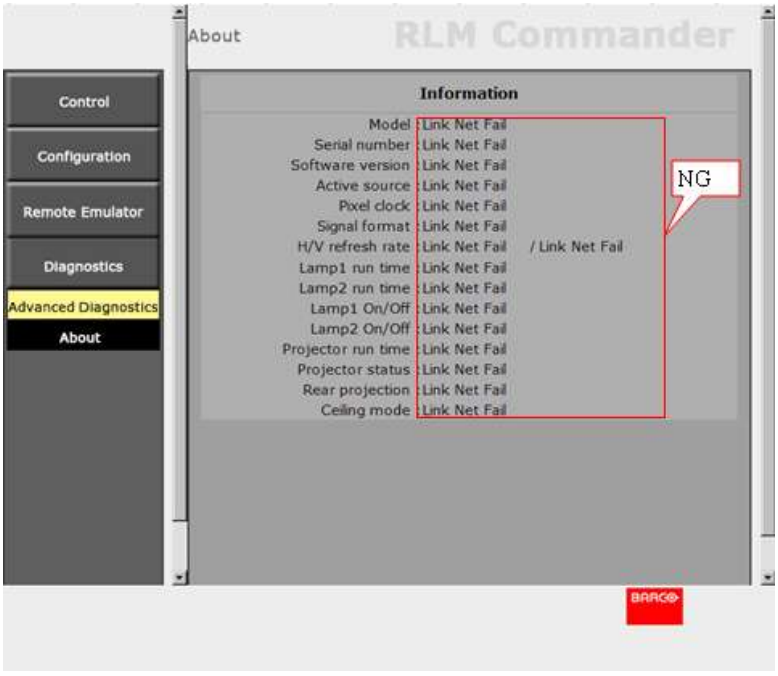


RJ-45 Test procedures

Key in your Projector IP to web browser

Information

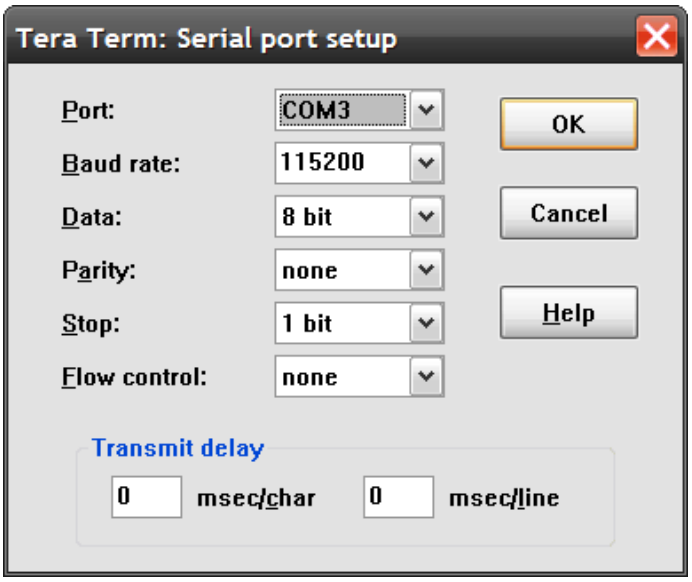



About
RLM Commander
Control
Configuration
Remote Emulator
Diagnostics
Advanced Diagnostics
About
Information
Model : Link Net Fail
Serial number : Link Net Fail
Software version : Link Net Fail
Active source : Link Net Fail
Pixel clock : Link Net Fail
Signal format : Link Net Fail
H/V refresh rate : Link Net Fail / Link Net Fail
Lamp1 run time : Link Net Fail
Lamp2 run time : Link Net Fail
Lamp1 On/Off : Link Net Fail
Lamp2 On/Off : Link Net Fail
Projector run time : Link Net Fail
Projector status : Link Net Fail
Rear projection : Link Net Fail
Ceiling mode : Link Net Fail
NG

5-4. Firmware Download Procedure for Ballast

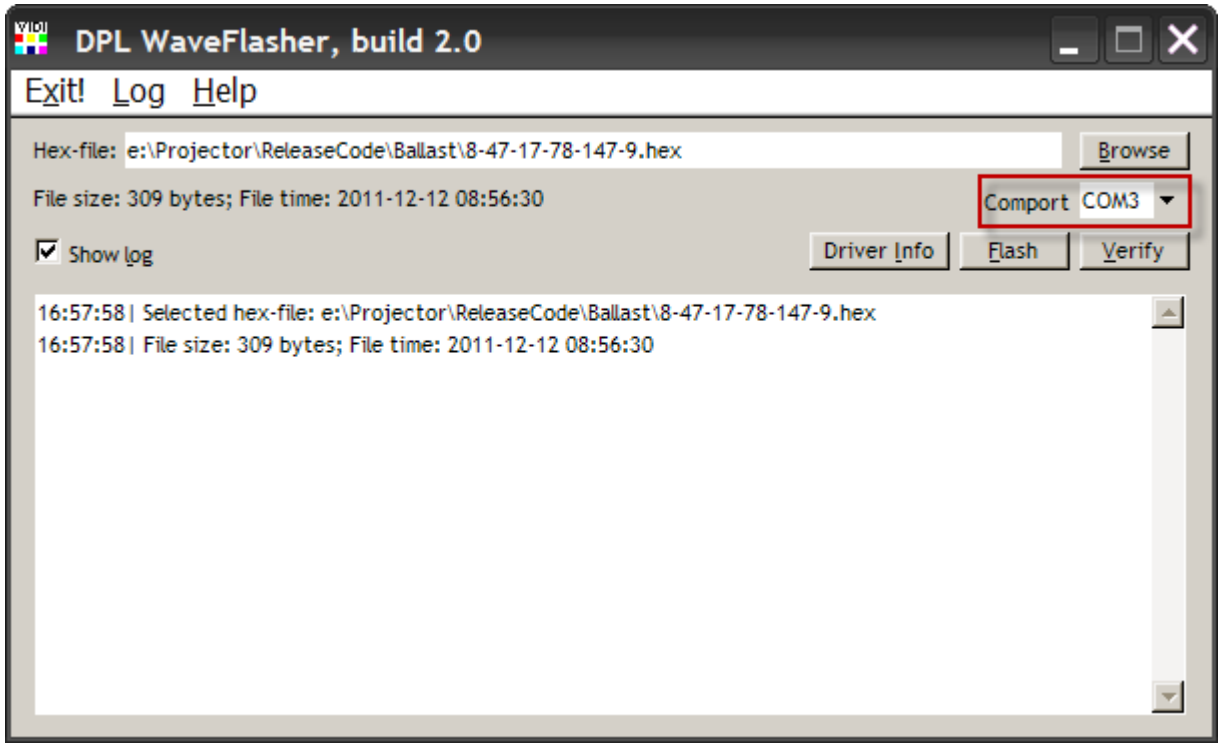
Ballast Firmware upgrade procedure:

1. Before proceeding the following ballast firmware upgrade procedure, please download and install Osram Unishape tool.
2. Connect the AC power of the projector and have the projector in standby mode.
3. Connect the RS-232 cable between the projector and the PC and make sure that the “Projector Control” is configured as “RS232”, if not, please use the hotkey to switch the “Projector Control” as “RS232”.
4. Open a terminal program (e.g. Tera Term) with the following setting, baud rate 115200, Databit:8, Parity: none, Stop:1 bit, Flow control: none.

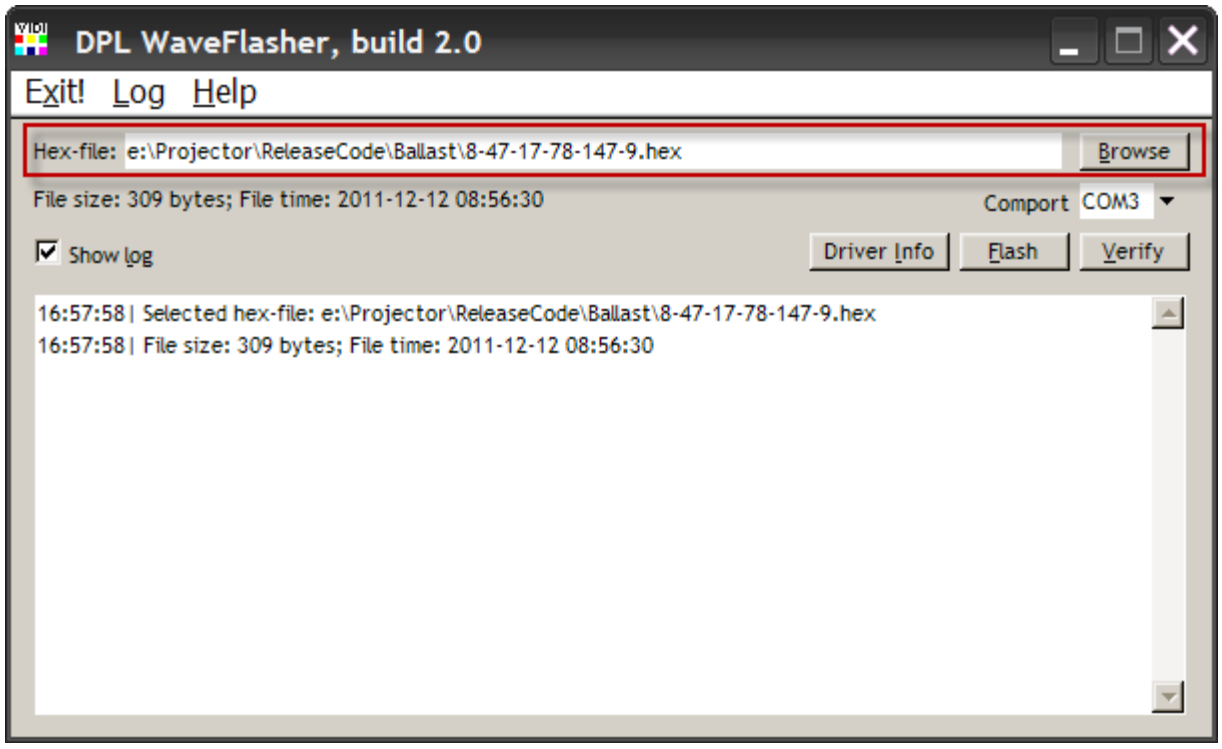


5. Power on the projector and wait for the completion of the powering on sequence. It takes about 90 seconds for the completion of the powering on sequence.
6. Input the command “op dlba1” on the terminal and then disconnect the connection and close the terminal program.

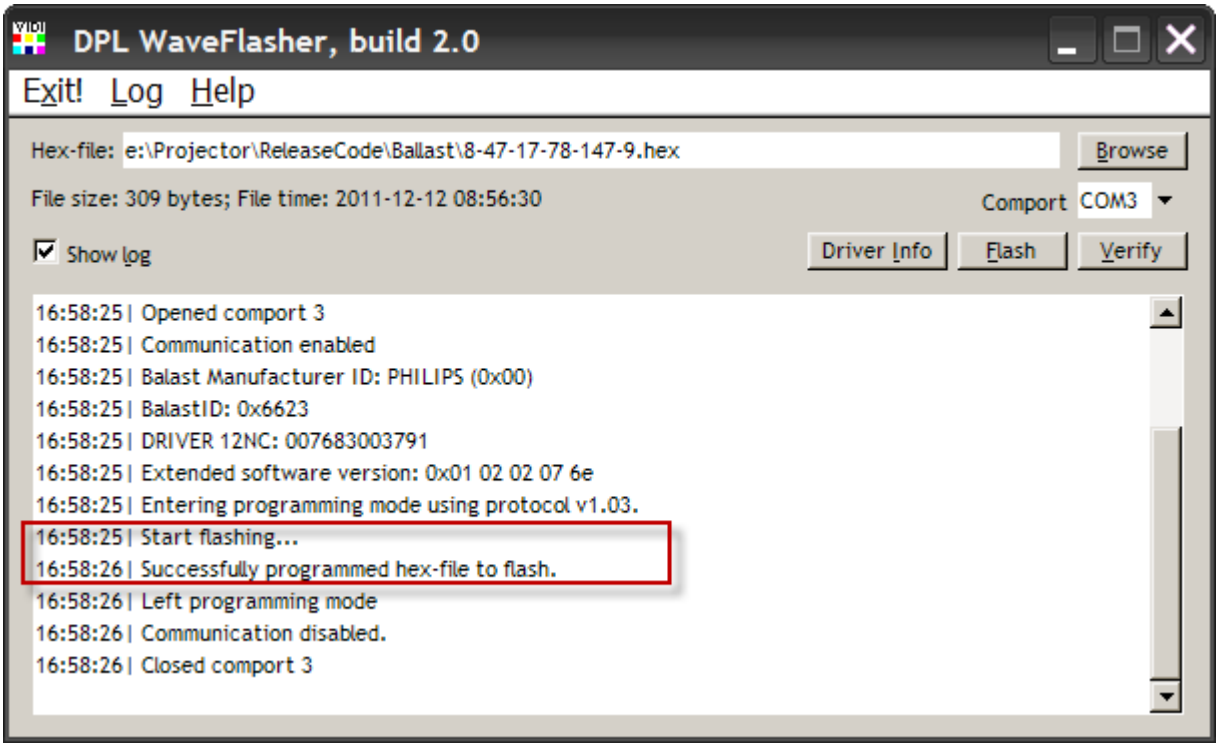
7. Activate DPL Wave Flasher, build tool and press the “Auto-detect” button to find the communication port with the ballast. As shown in the following diagram, Check COM PORT is setting as the communication port to talk to the ballast.



8. Press “Browse” button and then locate and select the new ballast firmware to be flashed.



9. Press “Flash” button to start the ballast firmware update.
10. Wait until the firmware update process finished as follows,

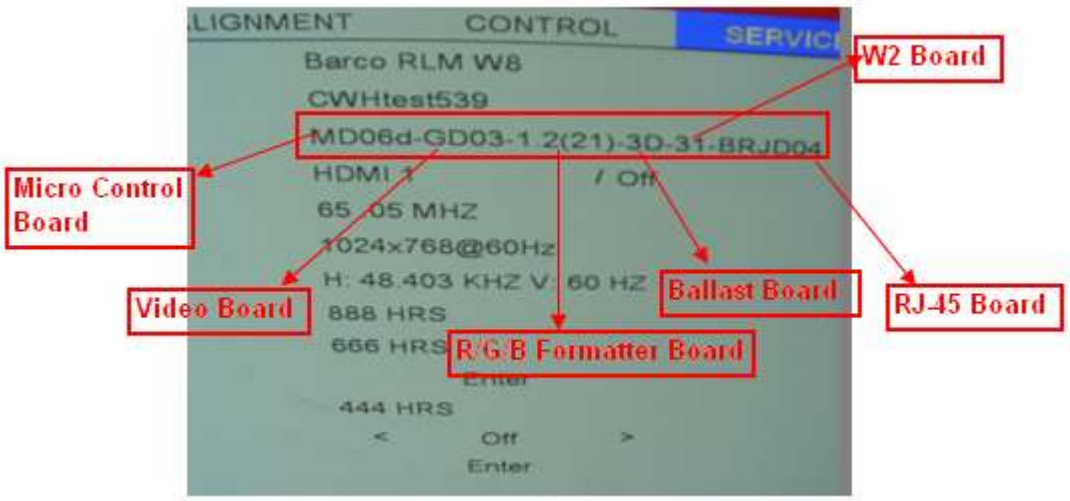


11. Switch off the AC power of the projector.

12. Repeat the above steps #2 ~ #11 for the firmware upgrade of the other ballast and in step #6, please input the command “op dlba2” to specify ballast2 as the target ballast to be updated. The other steps are the same.

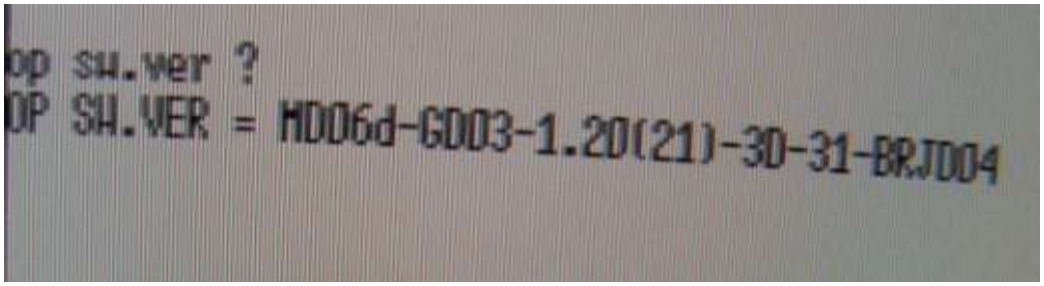
After finishing downloading all software in projector, please go to OSD to check your revision confirmation or go to RS-232 to command for confirmation.

(A). OSD

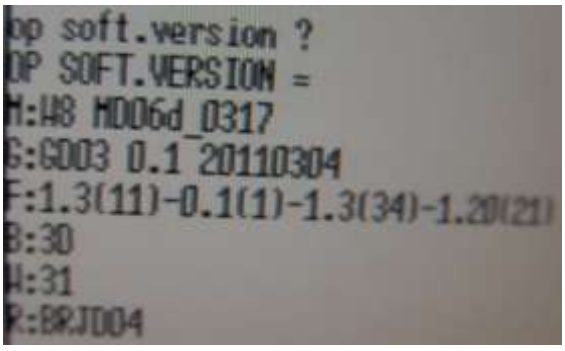


(B). RS-232

Please key in “op sw.ver ?” And, you can get all software revision.

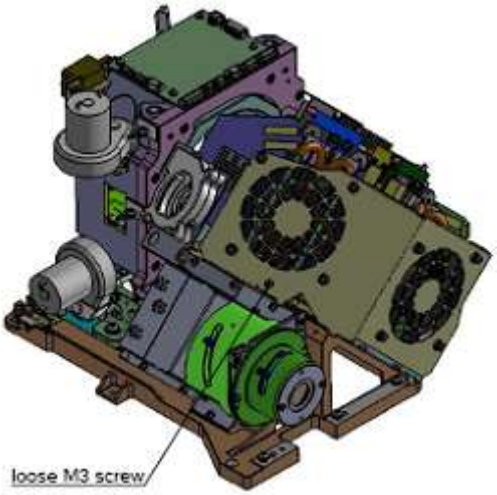


Or, please key in “op soft.version ?” And, you can get more detail software revision.

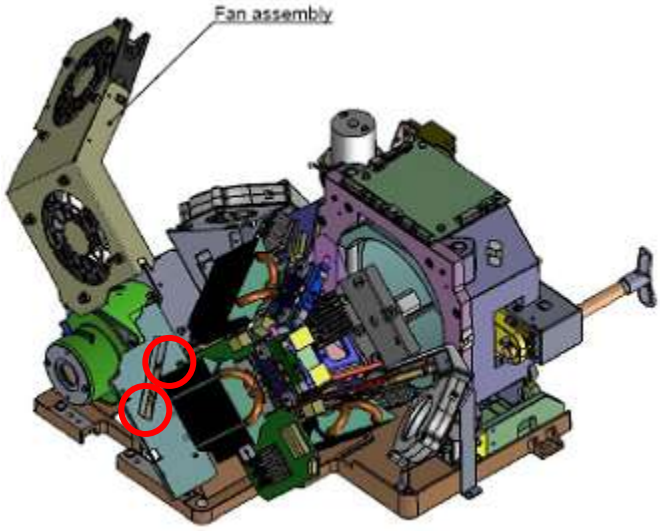


6. ADJUSTMENT

6-1. FIP Convergence (CG) Adjusting



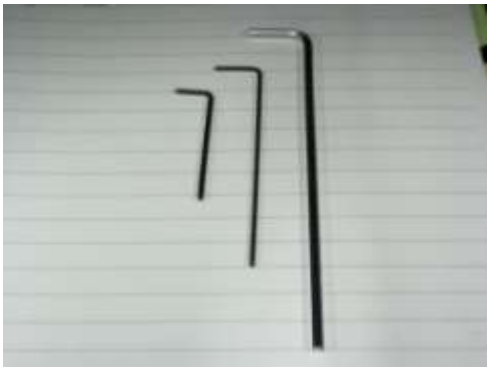
Before CG Adjust, please loose 1 pcs M3 screw.



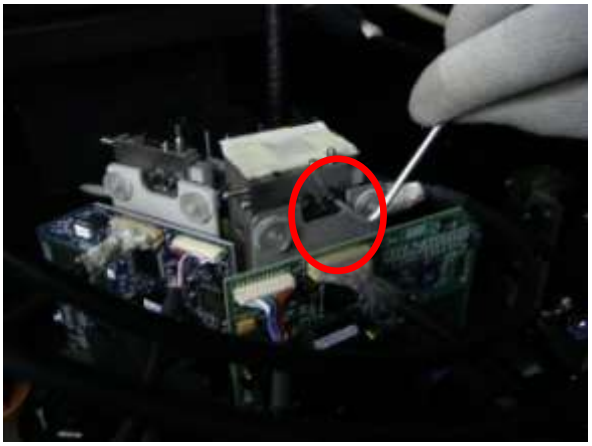
Then, please loose 2 M3 screw to remove the fan module.

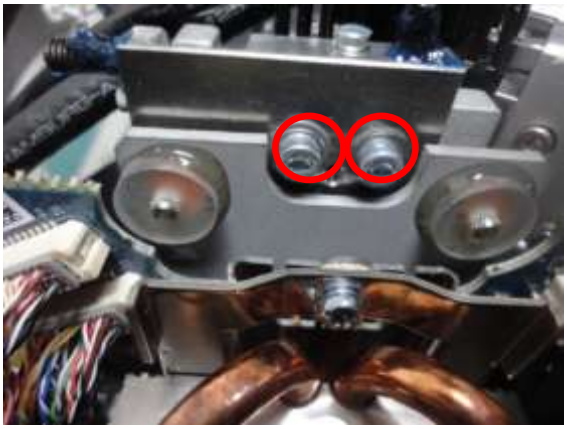
To take the B DMD Channel as the base to adjust G DMD Channel for example:

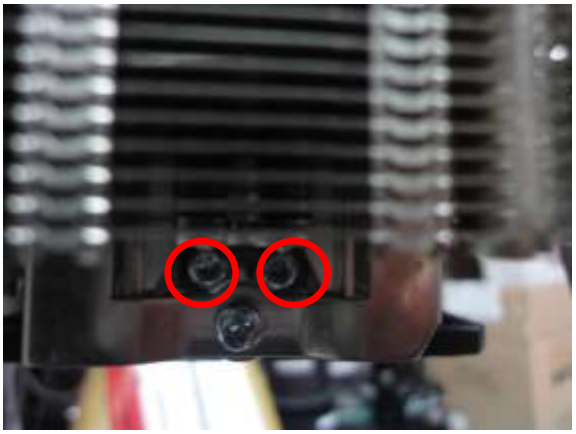
Step1. Prepare 3 kinds of hexagonal wrenches



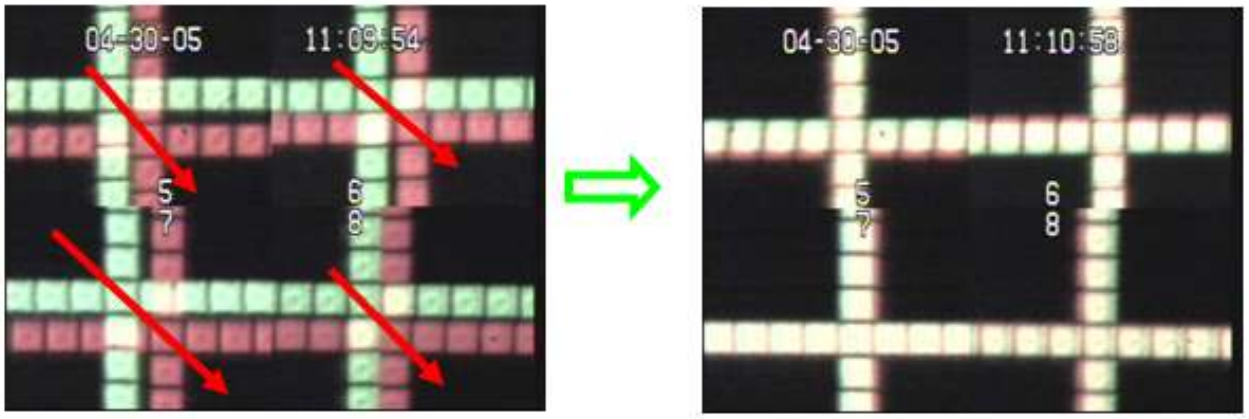
Step2. Use hexagonal wrenches to loosen 4 fixed screws.





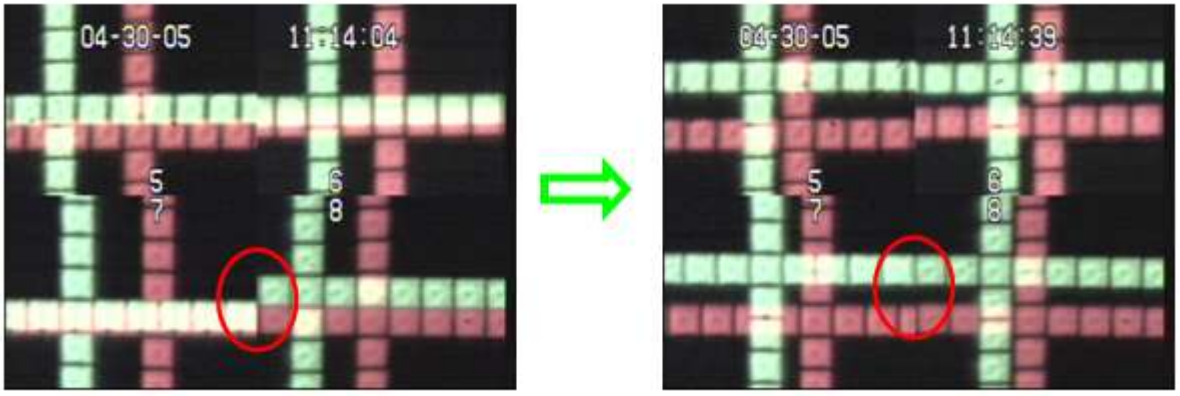


Step3. Use hexagonal wrenches to adjust first adjusting screw.

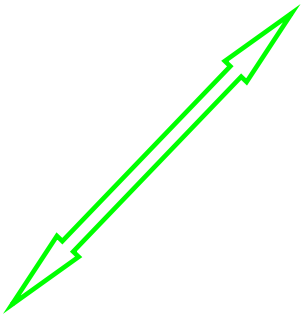


Movement from top left to bottom right

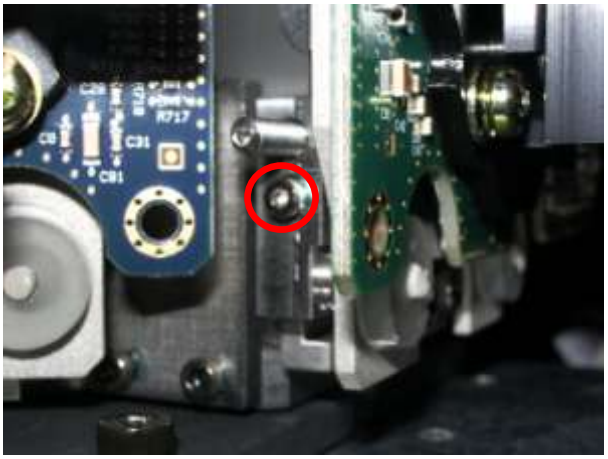
Step4. Use hexagonal wrenches to adjust second adjusting screw.

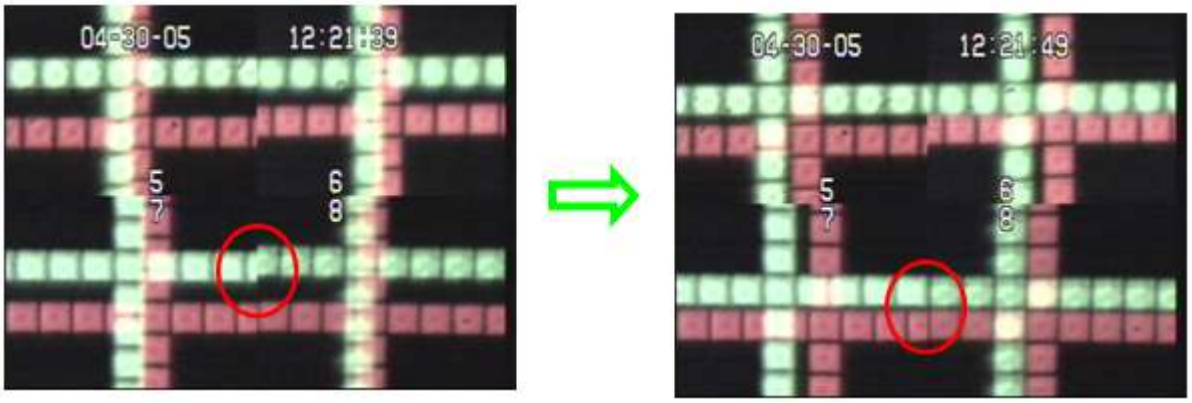


Movement from bottom left to top right

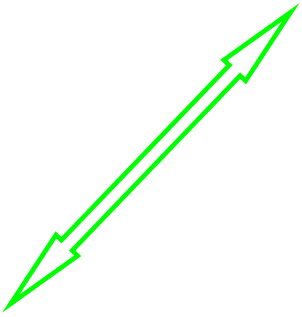


Step5. Use hexagonal wrenches to adjust third adjusting screw.





Movement from bottom left to top right

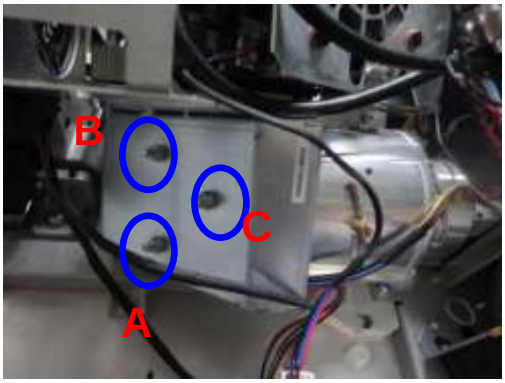


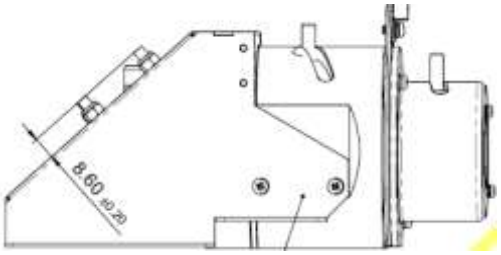
Step6. After CG already finished adjusting, please screw up 4 fixed screws slowly backward and forward.

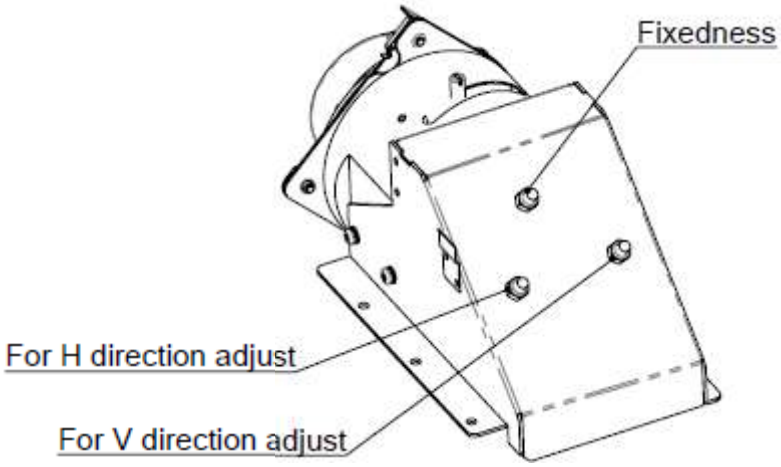
Note: If you feel the adjusting screw is too tight or too loosing when you adjust, please try to adjust spring screw.

6-2. Folding Mirror Adjusting

1. Use 7 mm Hex-Sleeve screwdriver to adjust.
2. Check the full-white image where color band is, and slight adjust fixed-nut to remove it.
3. When finish adjusted, add TB1401B glue on the nuts to fix it.







(1) To adjust nut A to move the image vertically
(2) To adjust nut B to move the image horizontally
(3) Nut C is to confirm the reflector default position (The distance from bracket to top of screw is 8.6 ± 0.2)

7. MAINTENANCE

7-1 Cleaning the projector

7-1-1 Cleaning the Cabinet

Refer to the following guide to clean the projector cabinet.

a. Wipe off dust with a clean dampened cloth.

b. Moisten the cloth with warm water and mild detergent and wipe the cabinet.

c. Rinse all detergent from the cloth and wipe the projector again.

CAUTION

To prevent discoloration or fading of the case, do not use abrasive alcohol-based cleaners.

7-1-2 Cleaning the Lens

Refer to the following guide to clean the projector lens.

a. Apply a little optic lens cleaner to a clean, lint free cloth (do not apply the cleaner directly to the lens).

b. Lightly wipe the lens in a circular motion.

CAUTION

Do not use abrasive cleaners or solvents.

To prevent discoloration or fading, avoid getting cleaner on the projector case.

7-1-3 Cleaning the Filters

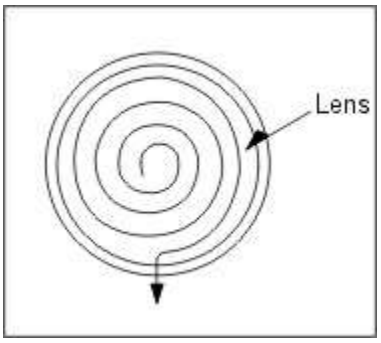
The projector uses filters to keep the fans free of dust and other particles, and should be cleaned every 500 hours of operation. In dustier environments, it is recommended to clean the filters more frequently. If the filter is dirty or clogged, your projector may overheat. When the message below is displayed the filters must be cleaned.

7-1-4 Cleaning the Optical Parts

Carry out cleaning of the main unit and interior when replacing the lamp or making inspections.
The glass cleaner used with the following parts is as follows.

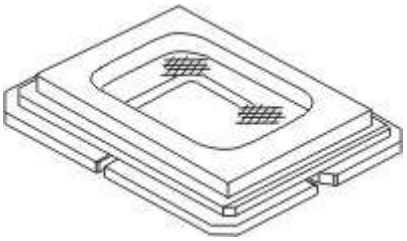
a) Cleaning the Projection Lens:
*When dust and fingerprints, etc. are on the lens surface, use the designated glass cleaner to remove as shown in the figure at the right. For fingerprints and other soiling that are difficult to remove with a dry cloth, use a designated glass cleaner which has been moistened in water and then use a dry cloth to dry it off.
*The projection lens surface has a special coating. Do not use detergents or solvents on the surface.

(a)



b) Cleaning the DMD:
*The DMD surface is glass and can be cleaned. However, avoid scratches as these can have a direct influence on the image.
*In case of dust on the DMD surface use an air cleaner (with a device to prevent static, if possible) to clean off the surface.
*In case of fingerprints, etc., add a small amount of water to the designated glass cleaner and wipe off in one direction. Then use the designated dry glass cleaner to wipe off in the same direction.
*Do not use absolute alcohol or other substances that could leave streaks after drying.

(b)

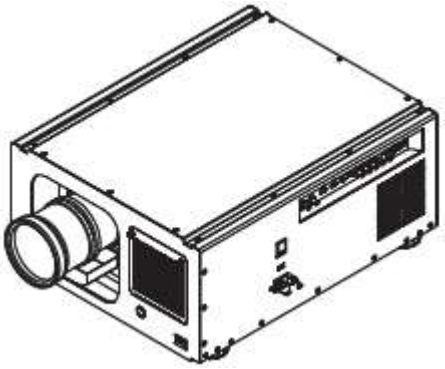


c) Cleaning the Reflecting Mirror:
*Be careful not to touch the reflecting mirror. The surface is composed of vapor deposition silver and touching it directly with the hands can lead to burnishing.
*Do not clean other than with air.

(c)

d) Cleaning the Main Unit:
*Clean with a soft fuzz-free cloth. In case of severe soiling, use a well-wrung cloth dipped in a neutral agent to remove soiling and then finish with a dry cloth.
*Do not clean with thinner, benzene or similar agents as this could lead to deterioration or peeling of paint.
*In case of dust in suction or exhaust holes or the interior, disassemble the main unit and use air to remove the dust from the inside.

(d)



7-2 Replacing Consumable Parts

During the course of normal usage, consumable parts become worn out resulting in reduced performance. The following guides detail how to replace the various consumable parts within the projector quickly and safely. Before replacing any of the parts, please take note of the following:

a. Ensure that the projector is turned off and disconnected from the power supply.
b. Ensure that the projector is in a clean, stable position before replacing parts.
c. Allow at least one hour after shutdown for the projector to cool before attempting to replace any consumable parts.
d. Do not interchange Lamp 1 and Lamp 2 after the projector has been used once.
e. Doing so will not allow the projector to display the correct lamp usage hours.

7-3 Replacing the Lamp

Lamp replacement

The lifecycle of ordinary projection lamp typically lasts for 1200 hours before requiring replacement (different lamp configurations will affect lamp life). From the OSD Menu, you can go to " Page 44 : Lamp1 Run Time ". to check how long a lamp has been used. You should also replace the lamp when the projected image gets noticeably darker. Contact your local dealer to purchase new certified lamps for your projector.

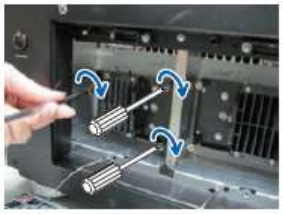
To replace the projector lamp

1. **Turn off the projector and unplug the power cord. Let the projector** cool for approximately 60 minutes before removing the lamp module for **replacement.**

   When you turn off the projector, the lamp inside the projector will still be very hot (approximately 200 ~ 300°C). If you attempt to replace the lamp without allowing the projector to cool, you could risk scalding yourself. This is why you should wait for no less than 60 minutes for the lamp to cool down in order to perform the replacement safely.

2. Loosen the lamp cover.

3. Use a screw driver to loosen the screws as shwon in the illustration.



4. Grasp the metal rod on the lamp cover and pull the lamp out.

5. Insert the new lamp in the direction shown in the illustration into the lamp assembly; tighten the two screws using a screw diver and make sure the lamp is firmly secured to prevent the lamp from shaking or poor contact.

6. Replace the lamp cover and firmly secure the two screws on the lamp cover.

7. Reconnect power to the projector and reset the lamp usage timer.

7-4 Replacing the Filter

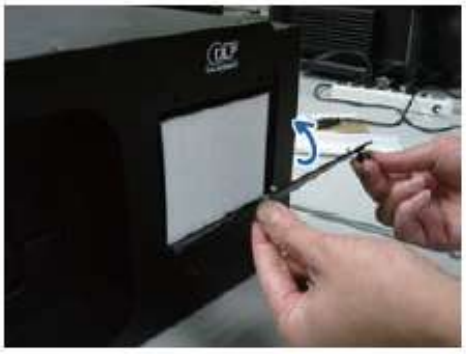
Replace the filter

Make sure to replace the filter when it is required to keep the air intake clear of dust, and prevent possible over temperature issue of the projector due to the clog of filter.

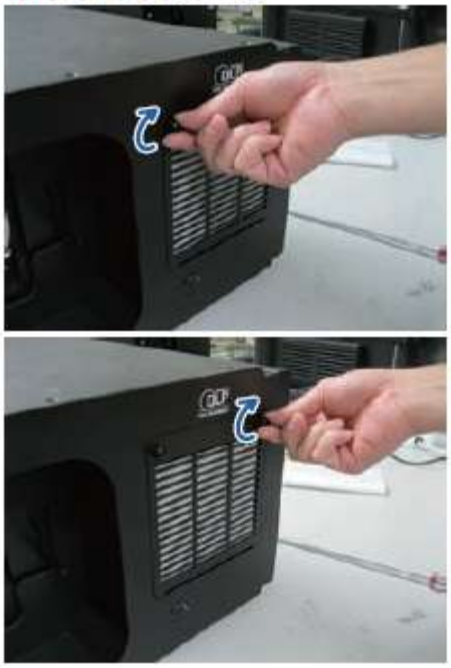
To clean the filter at the ventilation slots, refer to the following illustration:

1. Loosen the two screws on the cover of the ventilation slot.

2. Insert the new filter.



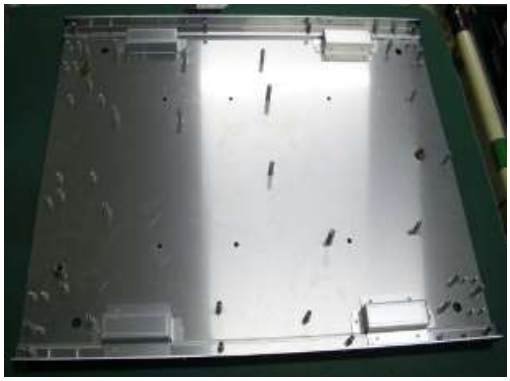
3. Reattach the filter cover and tighten the two screws.

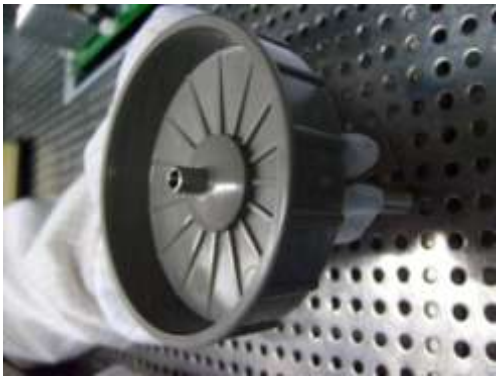
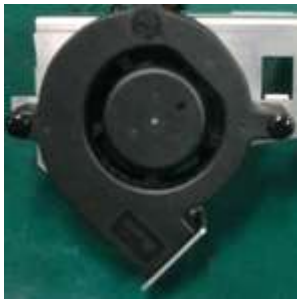


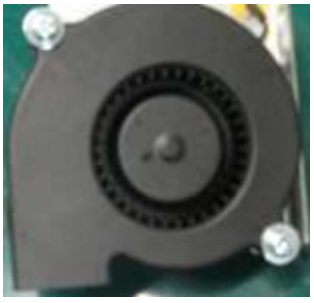
8. SPART PARTS LIST & SPARE PARTS PHOTO

Spare part list for RLM W12

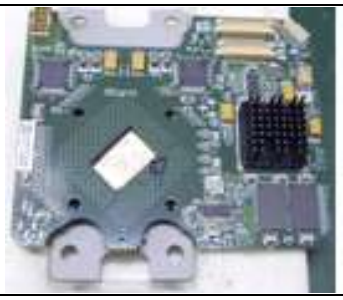
ITEM	TYPE	DESCRIPTION	Barco P/N	Photo
Cover				
1	Cover	BME K RLM W12 TOP COVER	R5001041K	
2	Cover	BME K RLM W12 FRONT COVER	R5001039K	
3	Cover	BME K RLM W12 REAR COVER	R5001040K	

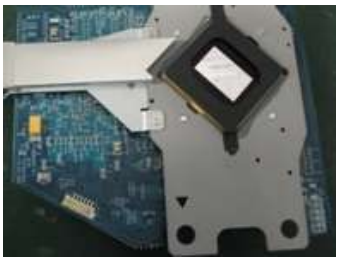
4	Cover	BME K RLM W12 SIDE COVER R	R5001038K	
5	Cover	BME K RLM W12 SIDE COVER L	R5001037K	
6	Cover	COVER AL BASE		
Filter				
1	Filter	BME K RLM W12 HD FLTR SPARE	R9801105	
Foot				

1	Foot	FOOT BOTTOM PC+ABS 94HB GRAY		
2	Foot	ADJ FOOT R PC+ABS 94V0 GRAY		
3	Foot	ADJ FOOT L PC+ABS 94V0 GRAY		
Fan				
1	Fan 7 & Fan 11	BME K RLM W12 FAN 7/11-R/B DMD	R5001055K	
2	Fan 6 & Fan10	BME K RLM W12 FAN 6/10-G/B DMD	R5001068K	

3	Fan20	BME K RLM W12 FAN 20 - LAMP	R5001064K	
4	Fan22	BME K RLM W12 FAN 22 - LAMP	R5001065K	
5	Fan21	BME K RLM W12 FAN 21 - LAMP	R5001066K	
6	Fan23	BME K RLM W12 FAN 23 - LAMP	R5001067K	
7	Fan 8	BME K RLM W12 FAN 8 - PWR/BALL	R5001042K	

8	Fan 2 & Fan 3	BME K RLM W12 FAN 2/3 - EXH	R5001049K	
9	Fan 1 & Fan 9	BME K RLM W12 FAN 1/9-EXH/PWR	R5001050K	
10	Fan 4	BME K RLM W12 FAN 4 - PRISM	R5001051K	
11	Fan 5	BME K RLM W12 FAN 5-ENGINE IN	R5001052K	
12	Fan 0	BME K RLM W12 FAN 0 - R DMD	R5001056K	

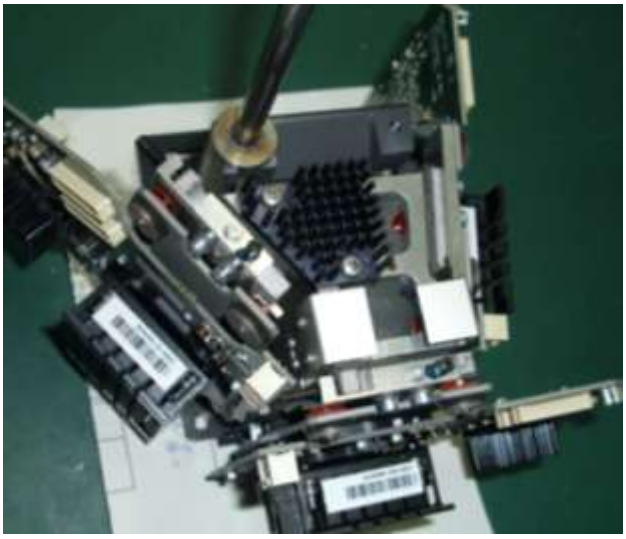
13	Fan–R1	BME K RLM W12 FAN-R1 - FPGA	R5001057K	
PCBA				
1	Board	BME K RLM W HORZ SENSOR BD	R5001080K	
2	Board	BME K RLM W VERT SENSOR BD	R5001081K	
3	Board	BME K RLM W12 MAIN FMT BD	R5001105K	
4	Board	PWB ASSY G FORMATTER BD		

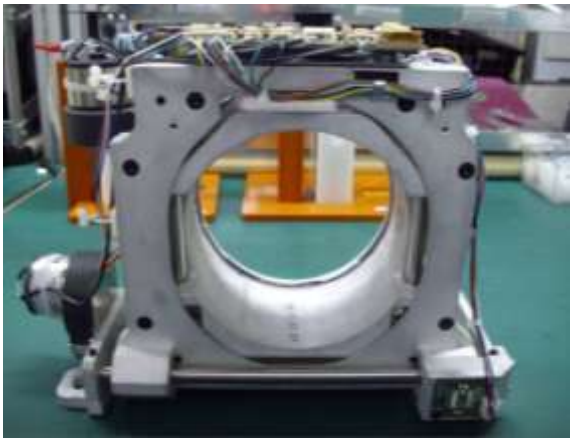
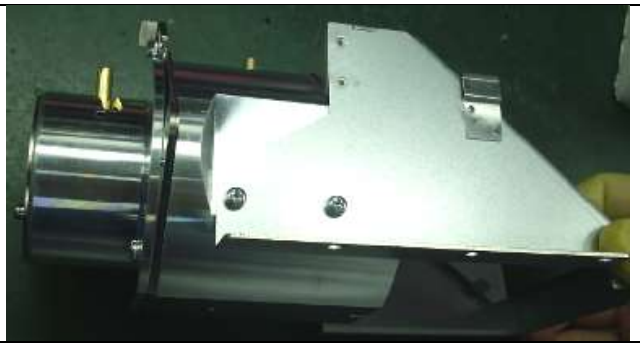
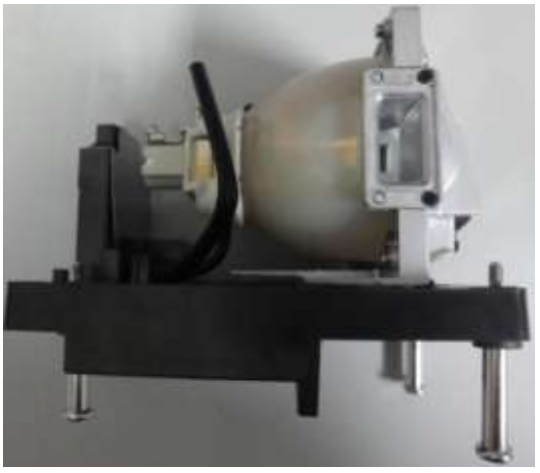
5	Board	PWB ASSY R FORMATTER BD		
6	Board	PWB ASSY B FORMATTER BD		
7	Board	BME K RLM W12 TTL LVL MOTOR BD	R5001101K	
8	Board	BME K RLM W FAN DRIVER B	R5001082K	
9	Board	BME K RLM W FAN DRIVER C	R5001084K	

10	Board	BME K RLM W12 MAIN POWER BD	R5001103K	
11	Board	BME K RLM W12 DC-DC BD	R5001098K	
12	Board	BME K RLM W KEYPAD BOARD	R5001089K	
13	Board	BME K RLM W IR BD	R5001087K	

14	Board	BME K RLM W12 FAN DRIVER E	R5001094K	
15	Board	BME K RLM W12 SLAVE UC	R5001102K	
16	Board	BME K RLM W12 RJ-45 BOARD	R5001106K	
17	Board	BME K RLM W12 DUAL LINK DVI BD	R5001107K	

18	Board	BME K RLM W12 AC FILTER BD	R5001099K	
19	Board	BME K RLM W12 SLIDE SWITCH	R5001100K	
20	Board	BME K RLM W12 W2_TDMS BOARD	R5001108K	
21	Board	BME K RLM W12 VIDEO BOARD	R5001104K	

22	Board	BME K RLM W12 LAMP DRIVER 400W	R5001031K	
Optic Module				
1	Optic engine	BME K RLM W12 ENGINE ASSY	R5001078K	
2	FIP	FIP ASSY WUXGA		

3	Lens Holder	BME K RLM W12 LENS HOLDER	R5001079K	
4	Illumination	ILLUMINATION ASSY		
5	Light Shutter	BME K RLM W12 SHUTTER ASSY	R5001077K	
6	LAMP MODULE	BME P RLM W12 LMP 400W	R9801087	

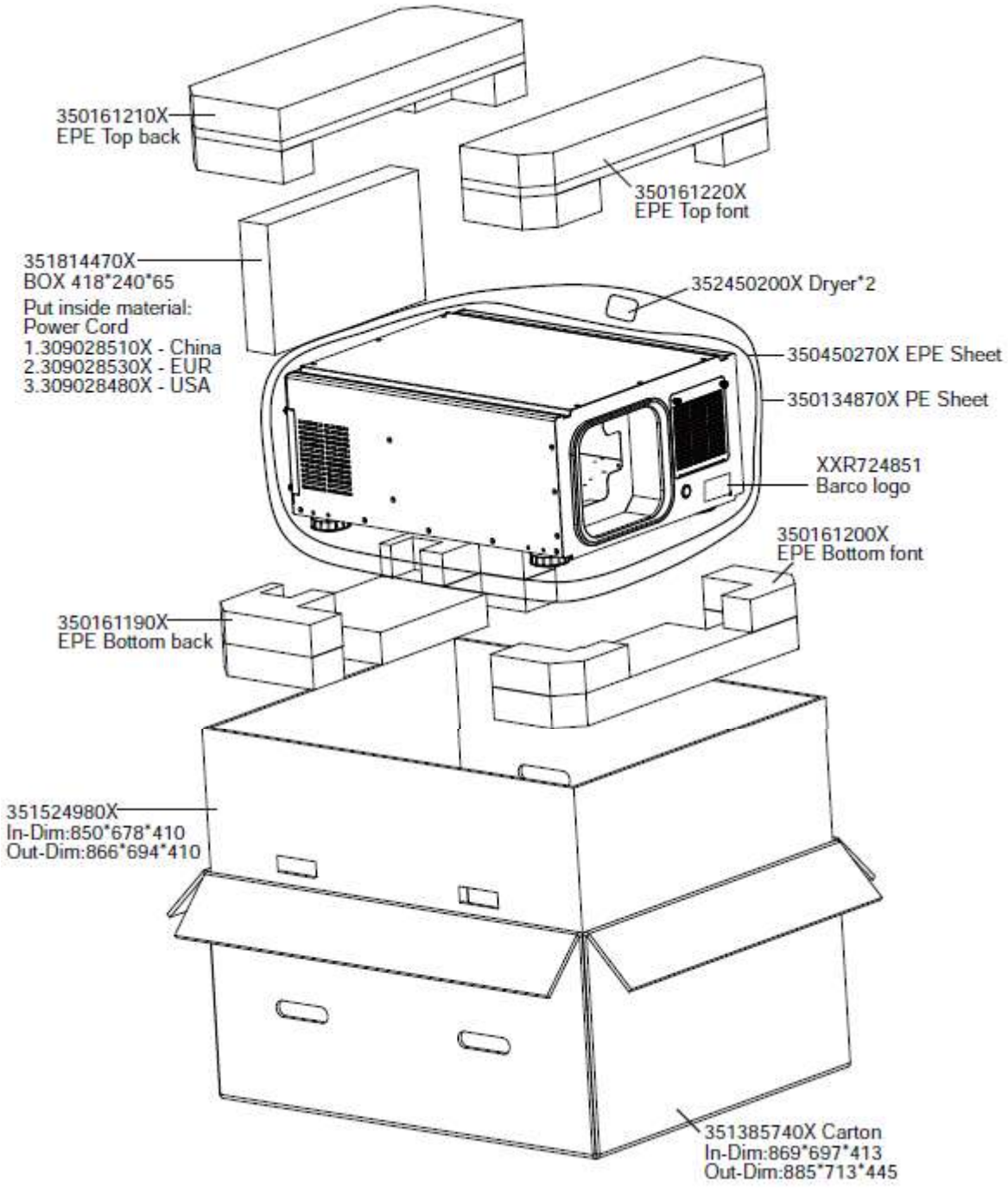
ACCESSORIES				
1	Package	END BLOCK EPE 695*191*138 WHT (Top Front)		
2		END BLOCK EPE 694*256*138 WHT (Top Back)		
3		END BLOCK EPE 694*191*120 WHT (Bottom Front)		

4		END BLOCK EPE 694*256*120 WHT (Bottom Back)		
5		SHEET EPE 2400*1000*1 WHT		
6		BAG PE 1300*750 CLR		
7		CARTON CRGD PAPER 877*705*429		

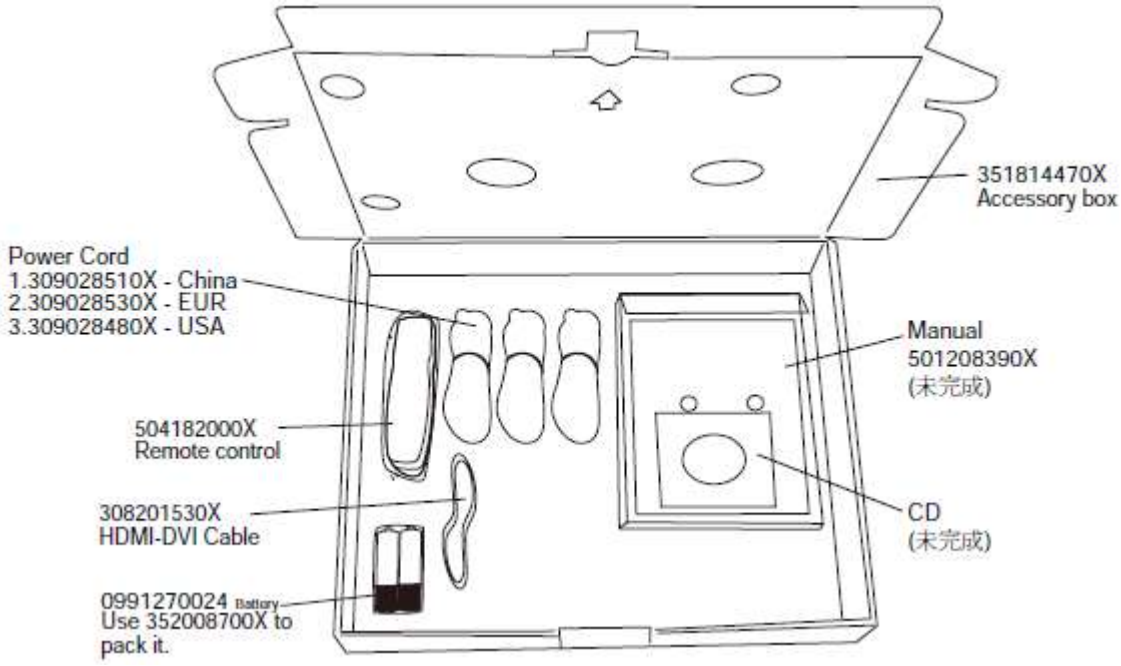
8	Power Cord	AC POWER CORD 3P 3*2.08mm^2 L2500 BLK (USA)		
9		AC POWER CORD 3P 3G*1.5mm^2 L2500 BLK (China)		
10		AC POWER CORD 2P 3G*1.5mm^2 L2500 BLK (EUR)		

9. PRODUCT PACKAGING

9-1. Full set unit packaging

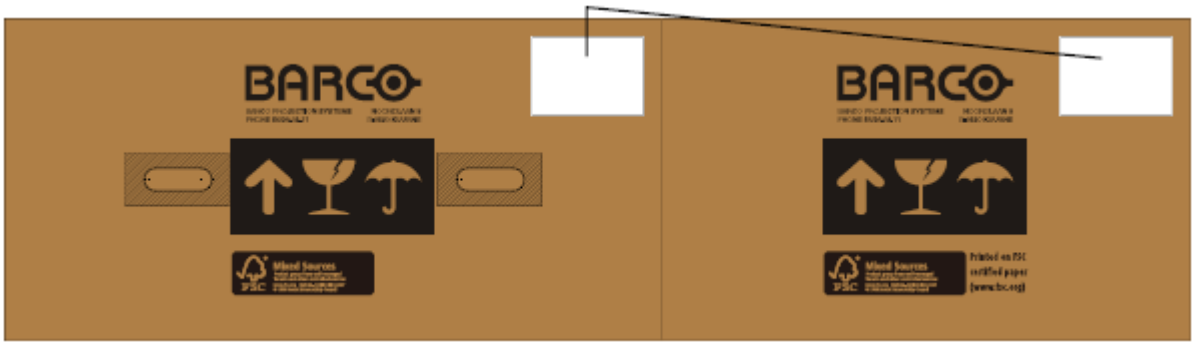


9-2. Model Accessory Part


351814470X
Accessory box
Power Cord
1.309028510X - China
2.309028530X - EUR
3.309028480X - USA
Manual
501208390X
(未完成)
504182000X
Remote control
CD
(未完成)
308201530X
HDMI-DVI Cable
0991270024 Battery
Use 352008700X to
pack it.

9-3. Carton

Serial No. Rule
11 99 XX SSSS
11 -> BARCO KUU plant
99 -> BARCO's supplier
XX -> 19 for W12
SSSS-> Serial no. start fm: 0001 to 9999
For example: 1199190001 mean the first product of W12
Get the no. from PO. ex:00, 01...etc
Barco nv
Noordlaan 5, 8520 Kuurne
Belgium
Item: R9006320
code 128
Descr.: BME RLM W12 BODY
Serial: 119919XXXX
Serial No. Rule (code 128)
Revision: 00
Batchcode: YMDD
refer Barco W12 Batchcode definition
EAN 13:
5 4997 78 0019 30



9-4. Serial NO. & Label Explanation

Barco W12 Batchcode definition:

2011	K
2012	L
2013	M
2014	N
2015	O
2016	P
2017	Q
2018	R
2019	S
2020	T
2021	U
2022	V
2023	W
2024	X
2025	Y
2026	Z

January	A
February	B
March	C
April	D
May	E
June	F
July	G
August	H
September	I
October	J
November	K
December	L

The batchcode is created as follows: ***YMdd***

With *Y: yearcode*
M: monthcode
dd: day of the month

Example:

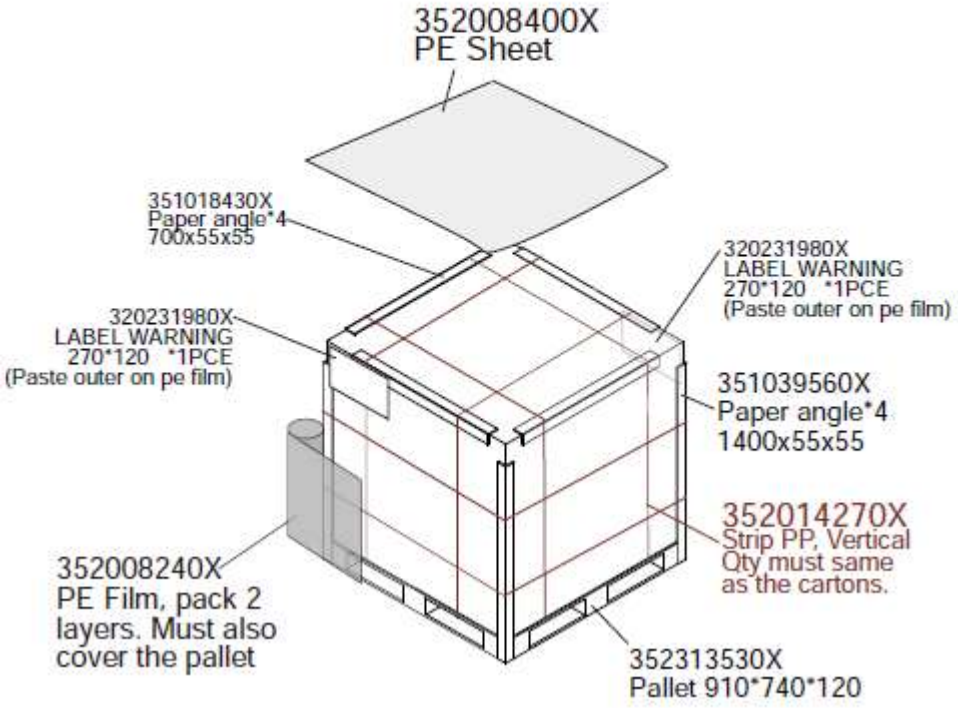
Assume a product is produced the 9th of August in 2011. 2011 corresponds with a ***K*** and August corresponds with an ***H***. This results in batchcode ***KH09***.

9-5. AIR Shipping Packaging

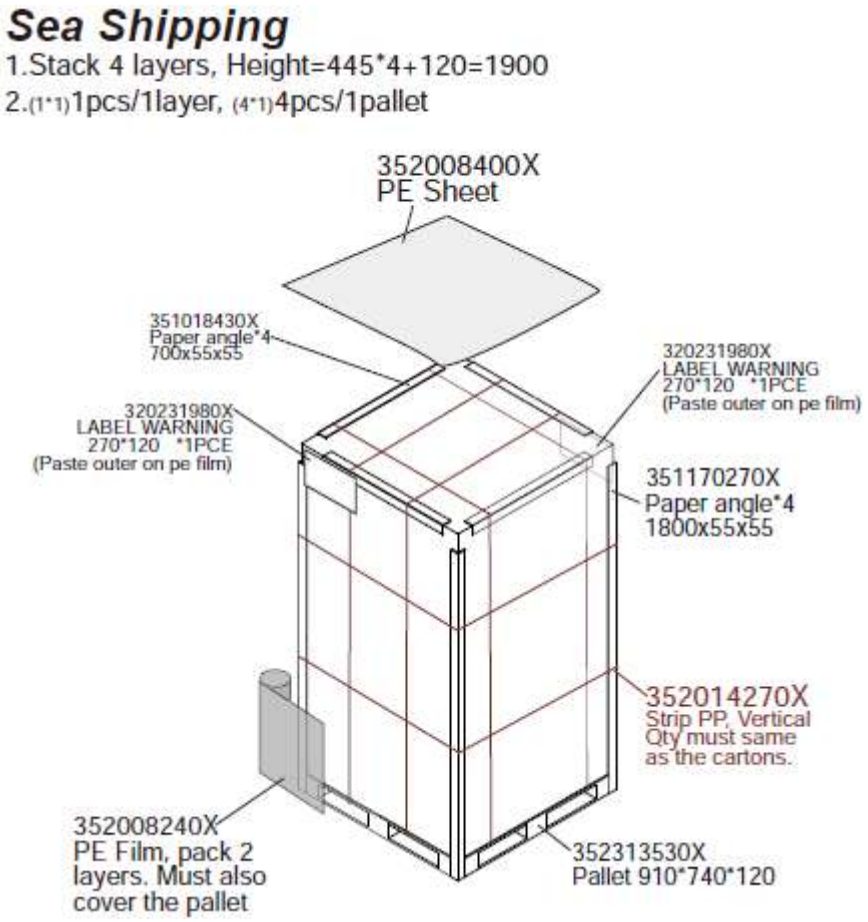
Air Shipping

1.Stack 3 layers, Height=445*3+120=1455

2.(1*1)1pcs/1layer, (3*1)3pcs/1pallet



9-6. SEA Shipping Packaging



APPENDIX. TIMING TABLE

A . SIGNAL REQUIREMENT

ALL SIGNAL MUST BE AVAILABLE WITH CHROMA

SIGNAL A FULL WHITE PATTERN, CHROMA PATTERN #41

SIGNAL B FULL BLACK PATTERN,CHROMA PATTERN #11

SIGNAL C COLOR BARS: EIGHT 100 PIXEL WIDE BARS.

SIGNAL D CROSSHATCH, CHROMA PATTERN #1.

B . TIMING OF INPUT SIGNALS

NOMINAL INPUT LEVE SPECIFICATION.

SIGNAL A. DATA VGA INPUT LEVEL
ANALOG VIDEO RGB : 0.7Vpp 75 ohm. POSITIVE.
SEPARATE SYNC : LOW =0V MIN.~0.65V MAX.
HIGH= 2.8V MIN.~5.5V MAX.
POSITIVE/NEGATIVE. 1K ohm.

COMPOSITE SYNC: LOW=0~0.65Vpp
HIGH=2.8~5.5Vpp
NEGATIVE. 1K ohm.

SIGNAL B. DVI-D (T.M.D.S) INPUT : T.M.D.S HIGH LEVEL, 1K ohm

POSITIVE.

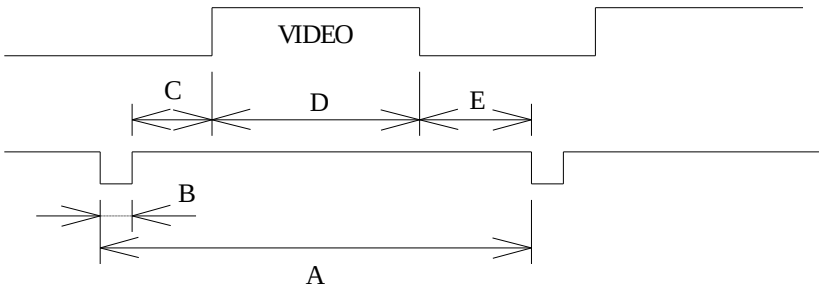
SIGNAL C. COMPOSITE VIDEO : 1Vpp 75 ohm POSITIVE.

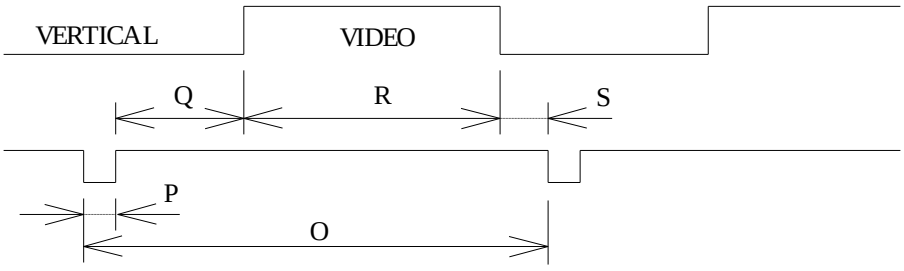
SIGNAL D. S-VIDEO (NTSC) : Y = 1Vpp, 75 ohm, POSITVE.
SYNC = 0.3Vpp, NEGATIVE
C = 0.286Vpp 75 ohm. POSITIVE

SIGNAL E. S-VIDEO (PAL) : Y = 1Vpp , 75 ohm, POSITIVE.
SYNC=0.3Vpp, NEGATIVE.
C = 0.3Vpp. POSITIVE

SIGNAL F. Components VIDEO : Y = 1Vpp, 75 ohm, POSITIVE.
SYNC = 0.3Vpp, NEGATIVE.
Cb = 0.7Vpp,75 ohm, POSITIVE.
Cr = 0.7Vpp 75 ohm. POSITIVE

TIMING OF INPUT SIGNALE





A :	H-TOTAL TIME	O :	V-TOTAL TIME
B :	H-SYNC PULSE WIDTH	P :	V-SYNC PULSE WIDTH
C :	H-BACK PORCH	Q :	V-BACK PORCH
D :	H-DISPLAY TIME	R :	V-DISPLAY TIME
E :	H-FRONT PORCH	S :	V-FRONT PORCH

C . TIMING TABLE

Signal Type	Resolution	Frame rate	Video	S-video	SCART	Y-Pr-Pb	BNC - RGBHV	BNC - YUV	HD15 - RGBHV	HD15 - YUV	RGB	YUV 8-bit
PC	640x480	59.94					x		x		x	
	800x600	60.32					x		x		x	
	848x480	47.95					x		x		x	
	848x480	59.94					x		x		x	
	1024x768	60					x		x		x	
	1024x768	85.03					x		x		x	
	1280x720	47.95					x		x		x	
	1280x768	59.870					x		x		x	
	1280x800	59.810					x		x		x	
	1280x960	60					x		x		x	
	1280x1024	60.02					x		x		x	
	1366x768	59.790					x		x		x	
	1440x900	59.887					x		x		x	
	1600x1200	60					x		x		x	

	1920x1080	47.95					x		x		x	
	1680x1050	59.94					x		x		x	
	1920X1200RB	60					x		x		x	
	1920X1200	50					x		x		x	
	1400X1050	60					x		x		x	
Apple Mac	640x480	66.59					x		x		x	
	832x624	74.54					x		x		x	
NTSC	NTSC (M, 4.43)	59.94	x	x								
PAL	PAL (B,G,H,I)	50	x	x								
	PAL (N)	50	x	x								
	PAL (M)	59.94	x	x								
SECAM	SECAM (M)	50	x	x								
SDTV	RGBS	50			x							
	1440x480i	60									x	x
	1440x576i	50									x	x
	480i	59.94				x						
	576i	50				x						
EDTV	480p	59.94				x	x	x	x	x	x	x
	576p	50				x	x	x	x	x	x	x
HDTV	1035i	60				x	x	x	x	x	x	x
	1080i	50				x	x	x	x	x	x	x
	1080i (Aus)	50				x	x	x	x	x	x	x
	1080i	59.94				x	x	x	x	x	x	x
	1080i	60				x	x	x	x	x	x	x
	720p	50				x	x	x	x	x	x	x
	720p	59.94				x	x	x	x	x	x	x
	720p	60				x	x	x	x	x	x	x
	1080p	23.98				x	x	x	x	x	x	x
	1080p	24				x	x	x	x	x	x	x
	1080p	25				x	x	x	x	x	x	x
	1080p	29.97				x	x	x	x	x	x	x
	1080p	30				x	x	x	x	x	x	x
	1080p	50				x	x	x	x	x	x	x
	1080p	59.94				x	x	x	x	x	x	x
	1080p	60				x	x	x	x	x	x	x

SDI Timing table:

Timing	SDI Link mode	Signal Standards	Color Encode	Sampling Structure	Bit Depth
NTSC	SD	SMPTE 259M-C 270Mbps SD	YCbCr	4:2:2	10
PAL	SD	SMPTE 259M-C 270Mbps SD	YCbCr	4:2:2	10
1035i60	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080i59	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080i60	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080P30	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080P25	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080i50	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080P24	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
720P60	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
720P50	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080Sf25	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080Sf30	HD	SMPTE 292M 1.5Gbps HD	YCbCr	4:2:2	10
1080P50	3G Level A	SMPTE 424M 3Gbps	YCbCr	4:2:2	10

1080P59	3G Level A	SMPTE 424M 3Gbps	YCbCr	4:2:2	10
1080P60	3G Level A	SMPTE 424M 3Gbps	YCbCr	4:2:2	10
1080P50	3G Level B	SMPTE 424M 3Gbps	YCbCr	4:2:2	10
1080P59	3G Level B	SMPTE 424M 3Gbps	YCbCr	4:2:2	10
1080P60	3G Level B	SMPTE 424M 3Gbps	YCbCr	4:2:2	10

High Definition TV (HDTV) support

The projector shall be capable of displaying the following HDTV display modes via either the digital DVI connectors.

640 x 480, progressive (60p), up to 60Hz. (SMPTE 293M-1996)
1280 x 720, progressive (60p), up to 60Hz. (SMPTE 296M-1997)
1920 x 1080, interlaced (30i), up to 60Hz. (SMPTE 274M-1998)
720 x 576 , progressive (50p),up to 50Hz.(HDTV ATV7250)
1920 x 1080, interlaced (60p), up to 60Hz. (SMPTE 274M-1998)

Video Timing Mode :

NTSC : Hsync 15734Hz +- 10Hz Vsync 59.94 Hz +- 1Hz
PAL : Hsync 15625Hz +- 10HZ Vsync 50Hz +-1Hz
PAL-M : Hsync 15734Hz +- 10Hz Vsync 59.94 Hz +- 1Hz
NTSC M : Hsync 15625Hz +- 10HZ Vsync 60Hz +-1Hz
SECAM : Hsync 15625Hz +- 10Hz Vsync 50Hz +-1Hz
480i : Hsync 15734Hz +- 10HZ Vsync 59.9Hz +- 1Hz
576i : Hsync 15625Hz +-10Hz Vsync 50Hz +-1Hz

Detail of timing chart

Timing name	Freq. H(KHz)	Freq. V(Hz)	Clock (M Hz)	H period	H display	H Sync	H backp	V Total	V display	V Sync	V backp
640*480-60	31.47	59.93	25.175	800	640	96	40	525	480	2	25
800*600-60	37.88	60.32	40	1056	800	128	88	628	600	4	23
848*480-47.95	23.674	47.95	25	1056	848	80	104	497	480	5	9
848*480-59.94	29.83	59.94	31.5	1056	848	80	104	500	480	5	12

1024*768-60	48.36	60	65	1344	1024	136	160	806	768	6	29
1024-768-85	68.88	85.03	94.5	1376	1024	96	208	808	768	3	36
1280*720-47.95	35.531	47.95	57.987	1632	1280	128	176	741	720	3	17
1280*768-60	47.776	59.870	79.5	1664	1280	128	192	798	768	7	20
1280*800-60	49.702	59.810	83.500	1680	1280	128	200	831	800	6	22
1280*960-60	60	60	108	1800	1280	112	312	1000	960	3	36
1280*1024-60	63.98	60.02	108	1688	1280	112	248	1066	1024	3	38
1366*768-60	47.712	59.790	85.5	1792	1366	143	213	798	768	3	24
1440*900-60	55.935	59.887	106.5	1904	1440	152	232	934	900	6	25
1600*1200-60	75	60	162	2160	1600	192	304	1250	1200	3	46
1920*1080-47.95	53.225	47.95	135.403	2544	1920	200	312	1110	1080	3	26
1680*1050-59.94	65.179	59.94	146	2240	1680	176	280	1089	1050	6	30
640*480-66	35	66.67	30.24	864	640	64	96	525	480	3	39
832*624-74.5	49.72	74.55	57.28	1152	832	64	224	667	624	3	39
NTSC (M)	15.734	59.94	13.5	—	—	—	—	—	—	—	—
NTSC (4.43)	15.734	59.94	13.5	—	—	—	—	—	—	—	—
PAL (B,G,H,I)	15.625	50	13.5	—	—	—	—	—	—	—	—
PAL (N)	15.625	50	13.5	—	—	—	—	—	—	—	—
PAL (M)	15.734	60	13.5	—	—	—	—	—	—	—	—
SECAM (M)	15.625	50	13.5	—	—	—	—	—	—	—	—
RGBS		50									
1440x480i	15.73	60	27	1716	1440	124	114	262	240	3	16
480i	15.734	59.94	13.5	858	712	63	63	262	242	3	14
1440x576i	15.62	50	27	1728	1440	126	138	312	288	3	20
576i	15.625	50	13.5	864	702	63	79	312	287	2.5	20
480p	31.47	59.94	27	858	720	62	60	525	480	6	30
576p	31.25	50	27	864	720	64	68	625	576	5	39
1920X1200RB	74.04	59.95	154	2080	1920	32	80	1235	1200	6	26
1920X1200	61.816	49.93	158.25	2560	1920	200	320	1238	1200	6	29
1400X1050	65.517	59.98	121.75	1864	1400	144	232	1089	1050	4	32
1035i	33.75	60	74.25	2200	1920	44	148	562	517	5	35
1080i	28.13	50	74.25	2640	1920	44	148	562	540	5	15
1080i (Aus)	31.25	50	72	2304	1920	168	184	625	540	5	57
1080i	33.75	59.94	74.176	2200	1920	44	148	562	540	5	15
1080i	33.75	60	74.25	2200	1920	44	148	562	540	5	15

720p	37.5	50	74.25	1980	1280	40	220	750	720	5	20
720p	44.96	59.94	74.176	1650	1280	40	220	750	720	5	20
720p	45	60	74.25	1650	1280	40	220	750	720	5	20
1080p	26.97	23.98	74.175	2750	1920	44	148	1125	1080	5	36
1080p	27	24	74.25	2750	1920	44	148	1125	1080	5	36
1080p	28.13	25	74.25	2640	1920	44	148	1125	1080	5	36
1080p	33.72	29.97	74.175	2200	1920	44	148	1125	1080	5	36
1080p	33.75	30	74.25	2200	1920	44	148	1125	1080	5	36
1080p	56.25	50	148.5	2640	1920	44	148	1125	1080	5	36
1080p	67.43	59.94	148.352	2200	1920	44	148	1125	1080	5	36
1080p	67.5	60	148.5	2200	1920	44	148	1125	1080	5	36

DVI dual-link for 3D

Signal Type	Resolution	Frame rate	DVI single-link	DVI dual-link	Reference	NOTE
PC	1920x 1080	120Hz		V		
	1920x 1080	100Hz		V		Image may flicker at certain graphics images at 3D
	1920x1200	120Hz		V	Reduced Blanking	
	1920x1200	100Hz		V	Reduced Blanking	Image may flicker at certain graphics images at 3D
	1920x 1080	60Hz	V			
	1920x1200	60Hz	V		Reduced Blanking	